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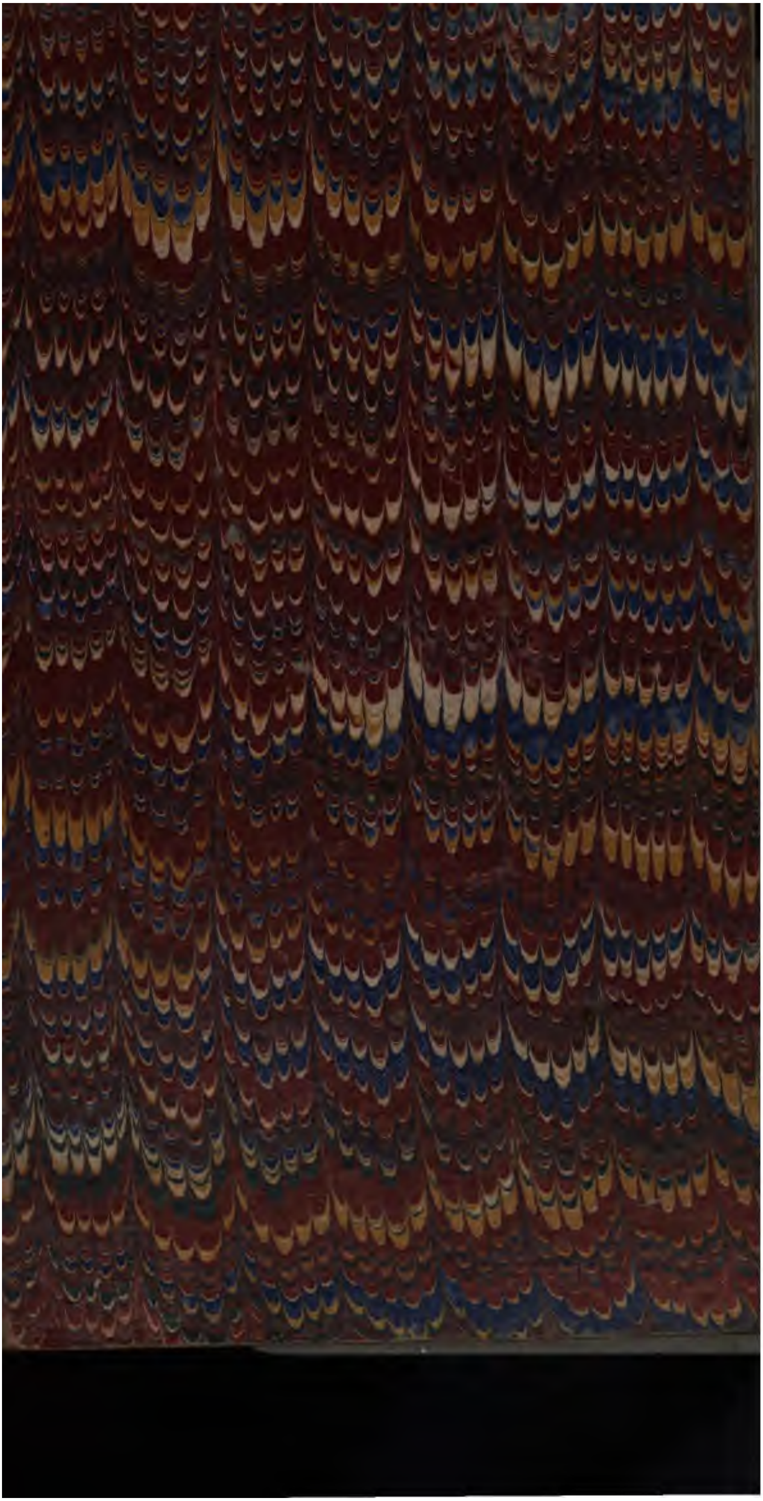

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PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

TOYS, GAMES, AND EXERCISES.

A.D. 1672–1866.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.

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PREFACE.

THE Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering, therefore, the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions, will, from time to time, become apparent, and be supplied in second or supplemental editions.

This volume contains Abridgments of Specifications to the end of the year 1866. From that date the Abridgments will be found in chronological order in the "Chronological and Descriptive Index" (*see* List of Works at the end of this book). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the reader (by the aid of the Subject-matter Index for each year) can continue his examination of the Abridgments relating to the subject of his search in the Chronological and Descriptive Index.

The title of the present series classifies together subjects with a close and apparent connexion. Both games and exercises have certain instruments designed to carry out their purposes, and thus, like toys, become the subject matter of Specifications of Patents. The present series, therefore, embraces various kinds of inventions relating to the amusement and recreation of children and adults.

Some inventions combine toys and games with apparatus for tuition, and others with articles of ornament and utility, including furniture; both these classes are inserted. Apparatus in the form of toys for the exhibition of scientific phenomena, as well as pyrotechnic toys or fireworks, are contained in the present work; but for improvements in rockets for military purposes, signalling, &c., the reader should refer to the series relating to "Firearms and other Weapons, "Ammunition, and Accoutrements." Although gymnastic and other exercising apparatus, whether for the healthy or for invalids, are included,—velocipedes, perambulators, and invalid chairs are excluded, and will be found in the series relating to "Carriages and other Vehicles for Common

"Roads;" the latter also in "Medicine, Surgery, and "Dentistry."

The following remarks apply to subjects allied to those included in the present series:—

"Go-carriages" for teaching children to walk are included, but apparatus for giving assistance to invalids are excluded, and will be found in "Medicine, Surgery, and Dentistry."

Inventions relating directly or indirectly to such exercises as horse-riding, swimming, rowing, &c., are not included, but will be found in other series of Abridgments.

Many optical instruments not described as toys, but yet of a character closely allied to the optical toys contained in this work, will be found in a series relating to "Optical, Mathematical, Nautical, and Astronomical Instruments."

The Abridgments marked thus (* *) in the following pages were prepared for another series or class, and have been transferred therefrom to this volume.

B. WOODCROFT.

December, 1871.

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INTRODUCTION.

Toys, games, and exercises have a very close connexion in their common object, namely, to amuse and teach children, and to assist in the recreation and the preservation of the health and strength of both children and adults. Their invention and use, therefore, naturally point to a very early origin.

Chess, as being the most intellectual game, deserves the first notice. It came to us from the Saracens, but its origination by the Hindoos appears well attested. The game, as played by the Birmans, had not the same pieces as our game, although otherwise, very much like it. The king and his minister (there being no queen) are mounted on elephants; these are defended by two castles, two knights on horseback, two officers on foot, and eight foot soldiers. The Honourable Daines Barrington in his *Historical Disquisition on the Game of Chess,* states it to be of Chinese origin. Du Halde cites a Chinese treatise by which it appears that it is the favourite game of the country. Mr. Eyles Irwin, in a letter to the Earl of Claremont, published in the fifth volume of the transactions of the Royal Irish Academy, relates that a young mandarin brought him a Chinese manuscript which contains an account of its origin in China 379 years after the time of Confucius, or about 2,000 years ago; according to this manuscript, Hansing, the commander of an expedition into the Shensi country, invented this game to occupy his troops whilst in winter quarters. Vopiscus, in his life of Proculus, informs us that one of the Roman emperors had the title Augustus given him because of his gaining ten games at chess successively. In Gale's edition of Hist. Ramsiens (C. 85) it is found that when Bishop Ætheric obtained admission to Canute the Great, he saw the king and his courtiers engaged at play, some at dice and others at chess. In the reign of Edward IV. chess became common in England.

Billiards was invented by the French, and practised by the Dutch, Germans, and Italians. Formerly in England, the mace was used in preference to the cue, but the superior address of foreigners with the cue soon brought it into fashion.

The invention of playing cards has been referred by some to the Romans, but their use in Europe does not date earlier than the year 1275. It appears, however, that in A.D. 1120, in China, the Emperor Seun-ho had dotted cards devised for the amusement of his wives; and that, in 1815, Captain Cromline Smith had some Hindoo cards of 1,000 years old shown to him. Davis, in his *Chinese,* says that their cards are small pieces of pasteboard, about two inches long and an inch broad, with black and red characters on the faces. In 1275, playing cards are mentioned in the *Stadtbuch* of Augsburg, where it is said that the Emperor Rudolf I. amused himself with playing cards and other games.

In regard to the game of cricket, which introduces the subjects of athletics and gymnastics, single wicket appears to have been played as early as 1344; a manuscript in the Bodleian Library furnishes this information. In 1685 the name of cricket is mentioned in the *Mysteries of Love and Eloquence* by Edward Phillips, the nephew of Milton.

Games of ball, in general, have a very remote origin. The Greeks erected a statute to Aristonicus for his skill in playing at ball. In the sixteenth century these games were in great favour in the courts of princes, especially in Italy and France; the ball was struck with a mallet. In the Arabian Nights Entertainments,* the physician Douban prescribes to the Grecian king a game with a ball, the mallet with which he played being charged with certain drugs; the Arabian Nights Entertainments were published at the commencement of last century by Antony Galland, and are believed to be of very ancient origin. The Chinese play at shuttlecock with their feet; a circle of some half-a-dozen keep up in this manner the game between them with considerable dexterity, the thick soles of their shoes serving them in lieu of battledores, and the hand being allowed occasionally to assist.

Gymnastic exercises were practised by the ancients, especially by the Greeks in their public games, such as the Olympic, the Pythian, the Nemean, and the Isthmian games. A passage in the Enchiridion of Epictetus shows how rigid was the preparatory discipline for these games:—"You wish to conquer at these "games? so also do I; for it is honourable; but bethink your- "self what this attempt implies, and then begin the undertaking. "You must subject yourself to a determinate course; must "submit to dietetic discipline; must pursue the established "*exercises* at fixed hours in heat and cold; must abstain from

" all delicacies in meat and drink; yield yourself unreservedly to " the control of the presiding physician, and even endure flog- " ging." The exercises were running, leaping, throwing the discus, and hurling the javelin; wrestling and boxing followed.

The Isthmian games comprised three great divisions, musical, gymnastical, and equestrian contests. Horse racing and chariot racing were practised at several of the games. The discipline and training preceding the entrance into these games, gave a great impetus to intellectual and moral culture as well as to physical development.

Skating, although a sport involving considerable endurance, self-possession, and dexterity, seems to have been unknown to the ancients. It probably originated in Holland, where it is principally practised as an expeditious mode of travelling in winter. In the fens of Cambridgeshire and Huntingdonshire, the speed of two miles in two minutes is said to have been attained. The Frieslander, who is generally a skilful skater, often goes for a long time at the rate of fifteen miles an hour. In 1801, two young women, going thirty miles in two hours, won the prize in a skating race at Groningen. In 1821, a Lincolnshire man, for a wager of 100 guineas, skated one mile within two seconds of three minutes.

The inhabitants of the maritime department of Landes, in the south-west of France, use stilts to raise them above their marshy soil, and placing a stick at their backs when they arrive at pasturage for their sheep, employ themselves in knitting.

Davis, in his *Chinese*, remarks that " in kite-flying the Chinese " certainly excel all others, both in the various construction of " their kites, and the heights to which they make them rise. " They have a very thin, as well as tough, sort of paper made of " refuse silk, which, in combination with the split bamboo, is " excellently adapted to the purpose. The kites are made to " assume every possible shape; and, at some distance, it is im- " possible occasionally to distinguish them from real birds. By " means of round holes, supplied with vibrating cords, or other " substances, they contrive to produce a loud humming noise, " something like that of a top, occasioned by the rapid passage " of the air as it is opposed to the kite. At a particular season " of the year not only boys, but grown men, take a part in this " amusement, and the sport sometimes consists in trying to bring " each *other's kites* down by dividing the strings."

The antiquity of children's toys is borne out by the fact that they have been found deposited with the bodies of children in the tombs of Melos and Athens.

In the article "Toys," Chambers's Encyclopædia, dated 1867, it is stated that Nurnberg is one of the principal places of manufacture, "a large portion of the inhabitants of that town being "engaged in the manufacture and trade in toys. The value of "the toys imported annually into Britain is about 140,000*l*."

TOYS, GAMES, AND EXERCISES.

A.D. 1672, February 15.—N° 167.

WELLS, John.—“A certaine engine which wilbe of very greate
“ vse and benefitt to the publique in teaching to performe by
“ artificiall horses the vsuall exercizes of a compleate horseman,
“ generally taught in academys (vizt.), the runing at the ring,
“ throwing of the launce, shooting of the pistoll, and takeing-
“ vpp of the head, and that att such easy and cheape rates as may
“ encourage many to learne the same whoe are otherwise, by the
“ greatnesse of the expence, prevented from acquireing the said
“ exercizes.”

[No Specification enrolled. Letters Patent printed, price 4*d.*]

A.D. 1673, November 25.—N° 172.

FOLYART, Raphaell.—“A new and rare invenc̃on knowne
“ by the name of the royall carousell or tournament, being framed
“ and contrived with such engines as will not onely afford greate
“ pleasure to us and our nobility in the sight thereof, but suffi-
“ cient instrucc̃ion to all such ingenious young gentlemen as
“ desire to learne the arte of perfect horsemanshipp with all the
“ vsuall practices and exercises thereof, as running att the ring,
“ throweing of the lance, takeing upp the head, and the like,
“ which is all performed in a streight line, and soe neerer ap-
“ proaching to the naturall way of horsemanshipp then any other
“ formerly invented or vsed.”

[No Specification enrolled. Letters Patent printed, price 4*d.*]

A.D. 1692, February 17.—N° 292.

NEALE, Thomas.—“A new sort of table to be plaid on with
“ balls to fall into small hollowes in the same table, made soe

"mathematicall and equally placed and inlaid with chances of "dice as may prevent all cheating thereat."

The inventor "haveing observed that the dice cōmonly made "for some yeares past were cutt very vnequall, and that the spotts "being filled with wax, such dice might be easily loaded, and "consequently be made false, he hath, with much industry, great "cost and care, invented 'A new sort of dice knowne by the "'name of mathematicks, cutt perfectly square by a mold, with "'spotts stained (instead of holes filled with wax) on them, to "'prevent deceipts at play.'"

[No Specification enrolled. Letters Patent printed, price 4*d.*]

A.D. 1692, July 4.—N° 300.

SAMBORNE, Thomas.—"A certaine exercise called fives," "which is moderately expensive, and in it selfe innocent and "harmlesse, and very much conduceing to the health and refreshment of such as practise it."

[No Specification enrolled. Letters Patent printed, price 4*d.*]

A.D. 1767, December 7.—N° 886. (* *)

BERKENHOUT, John.—"A method, entirely new, of dicing, "flowering, colouring, or marking playing cards, so as to render "them easily distinguishable from the white cards now used."

This invention is "to be performed by printing, impressing, "painting, flowering, dicing, stamping, staining, figuring, or "otherwise marking or colouring the said cards on the back, "so as to render them in anywise different in appearance from "the cards now in use, and thereby prevent the inconveniency "arising from mixing of two packs, which are not thus distinguished from each other."

[Printed, 4*d.* No Drawings.]

A.D. 1774, February 14.—N° 1065. (* *)

JACOB, Joseph, the younger.—"A method of ornamenting "carriages, sedan chairs, buildings, furniture, musical instruments, "books, and toys."

The Specification describes the invention as consisting "in "painting, gilding, japanning, lacquering, high varnishing,

" engine cutting, stamping, printing, engraving, inlaying and " piercing the metals commonly called tin foil, lead, and pewter, " beat or roll'd out into thin sheets and fixed on to the parts of " the aforesaid subjects designed to be ornamented."

[Printed, 4*d*. Woodcuts.]

A.D. 1779, February 11.—N° 1211.

BUZAGLO, Abraham.—" A muscular strength and health-" restoring exercise, by the means of machines, instruments, and " necessaries for practising the same."

The instruments shown in the drawings are:—

A " square " fixed to a wall and immovable, but containing within it a round part with a handle that " moves round to assist " the joints."

Various boards and weighted structures " to eradicate the " gout," to " assist " and exercise the muscles, " to assist the " sides and hips," " to assist the calves," to exercise " the muscles " of the back," " to correct gouty disorders in the ancles and " knees," " to assist the hips and ancles only," and " to assist " the ancles and knees." These boards are either flat, with one side higher than the other, or sloping, or with ridges, or crossed and otherwise shaped with handles to suit the purpose or exercise for which they are intended.

" An iron instrument to cure weakness in the back."

" A long pole to hold by."

" A crane to aid the muscles of the shoulders." Apparently this instrument carries handles, ropes, pulleys, and other appurtenances.

" A rest bench for depositing the patient's body under the " operation of cure."

" An engine for removing pains on particular joints." This appears to consist of a basin-shaped arrangement with handles.

" An elastick board to exercise after the gout and prepare the " limbs for further exercise." The said board is, apparently, fixed at one end and free at the other.

" A short pole " to assist in the use of the wooden structure for exercising the muscles of the back.

[Printed, 10*d*. Drawing.]

A.D. 1787, September 17.—N° 1621.

ROSE, John.—A "new method of preparing steel and ornamenting the same, in the several articles of steel buttons, "buckles, sword hilts, toys, and other steel work."

[No Specification enrolled. Letters Patent printed.]

A.D. 1788, January 15.—N° 1635.

HOHMANN, John George.—"A new machine for making "marbles for children from various sorts of marble and other "substances."

"Section 1st. There are stones broke to an inch and an half "square or two inches square, to be put into concentric circles, "of which the bottom part is stone and the top part wood, which "may be alternately changed, so that either the top or bottom "part may perform the revolution. The forming of the marbles "is done by percursion, and not turned upon the centre, as "billiard balls or fossills turned into small globes, &c.

"Section 2nd acts upon the same principle as Sec^{n} 1st; but "instead of the top, as in the former, the bottom part performs "the revolution."

The drawings show the machines, described above, driven by straps and spur-wheel gear. Water is supplied to the "concentric "circles" by means of pipes from a reservoir.

[Printed, 1*s.* 2*d.* Drawings. See Rolls Chapel Reports, 6th Report, p. 179.]

A.D. 1796, September 9.—N° 2135.

LOWNDES, Francis.—"New invented machine for exercising "the joints and muscles of the human body."

This machine is called the "gymnasticon," and it is "so constructed and arranged as to give and apply motion and exercise, "voluntary or involuntary, to the limbs, joints, and muscles of "the human body." The "essential properties" of the machine "depend on the use and application of cranks, moveable or solid "wheels, or fly wheels, treadles, or treading boards and springs, so "constructed and arranged as to produce the aforesaid effect."

The drawings show a strong rectangular frame, in the lower part of which are two treadles ("for supporting the feet of the "patient") connected to cranks, and in the upper part of which are cranks, on which are "wooden handles loosely put on," which

" are to support the arms of the patient." The throw of the cranks is adjustable. The pivots of the upper cranks "run in " sockets or flanches, which may be elevated or depressed, according to circumstances, "by slits or holes perforated through " the supporting front posts." Grooved wheels connected by a band, are respectively fitted on to the axes of the upper and lower cranks; a handle is fixed to the lower wheel "to give motion to " the machine, if necessary." On the treadle is "a spring or " spring board, destined to give action to the joints and muscles " of the feet."

[Printed, 6*d*. Drawing. See Repertory of Arts, vol. 6, p. 88.]

A.D. 1799, December 20.—N° 2365.

LUDLOW, Edmund Edward, and WILCOX, Ann.—" Intire " new or improved playing cards, to be named 'brilliant new- " 'invented knight's cards.' "

"The utility of which invention is, all but aces and court " cards, not requiring to be turned by having entire new pips to " render each suit perfectly distinct, to remove any mistake in the " turn of dealing, and to prevent the misplacing of any card in " playing without any immediate discovery." "Spades, hearts, " and clubs to be as much reversed as conveniently can be done, " so as to appear as much as possible the same both ways." " The pips of spades to have a line of black round the edge, " then one of white, and filled up with black; the hearts to " have a line of red, then white, and filled with red; the " diamonds to be red outside and white inside; the clubs to " be black outside, white inside."

A description of the aces is given, but is — in the after part of the Specification, and as "the ace of spades must be had from " the Stamp Office," altered as follows:—" Ace of hearts to " have long lines, red on white, surrounded with garter, motto, " and date, of the Order of St. Patrick, with suitable ornaments, " and a united collar of garter, thistle, and Saint Patrick, all " red; ace of clubs to have long lines, black on white, surrounded with garter, motto, and date, of the Order of the " Thistle, with suitable ornaments; and the lyon and unicorn " may be put with an under motto of the cards, &c., all black."

In the text of the Specification the ace of diamonds is described as being *made with* "crost lines, red on white, surrounded with

" garter, &c., &c., of the Order of the Bath, &c., all red." Other details are alluded to respecting the court cards and the edges of the pack.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 13, p. 145; and Rolls Chapel Reports, 6th Report, p. 148.]

A.D. 1801, March 16.—N° 2485.

YOUNG, Ann.—An "apparatus consisting of an oblong square " box, which, when opened, presents two faces or tables, and of " various dice, pins, counters, &c. contained within the same, " by means of which six different games may be played," all having relation to "the science of music."

"The box is composed of two equal pieces or frames of cabinet " work, united by hinges like backgammon tables; when it is " opened or spread out the two pieces exhibit different faces, " the one presents at each end two musical staves or systems of " five lines. In each line and space of those staves a number " of small holes are drilled, in which are occasionally stuck the " pieces of turned ivory and wood, which are designed to represent the sharps and flats that severally belong to the different " keys or modulations of music. Under each of these staves " there is a drawer, in one of which are contained the dice, pins, " &c. which are used in playing with sharps, and in the other " the corresponding dice, pins, &c. used in playing with flats." Dice boxes, a delineation of the finger board of a piano-forte, coloured counters, &c., are also included in the said box.

The first game has relation to " the signatures of all the major " and minor keys of music."

The second game "is an exercise upon the intervals of music."

The third game relates to "cadences or preludes."

The fourth game relates to the "rule of the octave."

The fifth game has relation to "the resolution of discords."

The sixth game is an exercise upon "modulations."

[Printed, 10*d*. No Drawings. See Repertory of Arts, vol. 16, p. 9.]

A.D. 1803, August 3.—N° 2729.

GODBOLD, Francis.—" An improvement upon dice."

"Take a correct blank cube of ivory, and instead of sinking " and blacking the spots, take a punch, drill, or other proper " instrument, and make small circles, very slightly impressing

" or marking the same. Then fill the circles with black cement " or other proper material or colour, and the dice are completed."

A sketch is given in the margin of this Specification showing in two views all the faces of a die, the spots being marked with finely-drawn circles.

[Printed, 4*d.* No Drawings.]

A.D. 1809, December 5.—N° 3283.

WARE, George.—" An improved apparatus and machinery for " the support and exercise of the human frame, and for the " prevention of bodily deformity."

The apparatus consists of a raised platform of strong wood, having side frames and pillars of wood strongly secured to the platform, and " placed in an angle at least forty-five degrees." Two back boards " slide up and down when put in motion in " grooves inserted in the pillars of the side frames. At the back " of the lower board is affixed two wooden sliding bars, which " pass into grooves cut into the centre of the upper board, the " bars to be confined with screws, so that the upper board may " be raised and lowered as occasion may require." A small wooden seat in the lower back board is " moveable at pleasure, " and fixed by means of brass pins and receiving holes ;" " the " seat is to place the lower part of the human body upon, to " force down the back boards to work the springs below them." Elliptical steel springs are placed " immediately under the lower " back board, but not fixed to it," and are " rivetted at the upper " part to an iron bar." The lower part of the springs are firmly fixed to an iron cross bar that is screwed " into the under part " of the platform at each end." A front board, connected with an elliptical spring, is " for the knees of the person exercising to " press against it to put it in motion." Moveable stocks are employed " to confine the feet to a certain position."

Arm springs, keyed through the side frames at the upper angle, have lines or ropes hung to them for the use of the hands and arms. Other adjuncts are described in detail.

[Printed, 6*d.* Drawing. See Rolls Chapel Reports, 7th Report, p. 206.]

A.D. 1817, July 10.—N° 4136.

BREWSTER, David.—A " new optical instrument called the " kaleidoscope for exhibiting and treating beautiful forms and " patterns, of great use in all the ornamental arts."

"This instrument in its most common form consists of two "reflecting surfaces inclined to each other at any angle, but "more properly at an angle which is an aliquot part of 360°." "The plates should vary in length according to the focal dis- "tance of the eye," or distinct vision of the object placed at the outer end of the tube in which the reflecting surfaces are mounted is obtained by an eye lens, when the said surfaces are shorter than the focal length of the eye. The tube is the length of the surfaces, and has a small aperture at the angular point of the reflecting surfaces at which the eye is placed. The successive reflections between the polished surfaces enable an eye placed at the aperture to perceive a circle of light divided into sectors; any object placed before the outer end of the tube appears repeated in every sector, "and every image of the object will "coalesce into a form mathematically symmetrical and highly "pleasing to the eye." The object may be made to move, and it may be coloured. Distant objects may be viewed by means of a convex lens placed beyond the reflectors, and in a tube exterior to the reflector tube. Three reflecting planes may be introduced, polarised light may be used, the effects may be exhibited to many persons at once (upon the principle of the magic lantern), and the figures can be traced by the camera lucida. Separating the inclined reflectors gives annular patterns, and rectilineal ones are shown by parallel reflectors. The kaleidoscope "seems to realise "the idea of an ocular harpsichord."

[Printed, 4*d*. Woodcuts. See Repertory of Arts, vol. 31 (*second series*), p. 321; Thomson's Annals of Philosophy, vol. 11, p. 451; and Rolls Chapel Reports, 7th Report, p. 117.]

A.D. 1832, February 23.—N° 6231.

DE LA RUE, THOMAS.—"Certain improvements in making or "manufacturing and ornamenting playing cards."

1st. Employing colours mixed with oil in printing from raised surfaces, either in wood, metal, or other material, in the above-mentioned manufacture.

2nd. "Printing the colours of playing cards from lithographic "stones" when the said colours are mixed with oil.

3rd. Ornamenting the pips and honors "with gold, silver, or "other metals, or bronze, when such ornamenting is produced "by raised surfaces or lithographic printing."

In reference to the first improvement, a number of wooden *blocks, equal to the* number of colours employed, are carved with their respective parts of the design in relief. The relative and true register of the said blocks is secured by means of pins passing into holes, two pins being to each block.

In producing the various coloured impressions from lithographic stones all in good register, the registering holes are made in the face of the stones. A steel guide is used to mark out the place of the holes, so as to have them similarly placed in all the stones. The designs are made relatively on the stones by means of sheets of paper suitably cut out. Ignited linseed oil is used in the preparation of the oil colours.

In the third improvement, japanners' gold size is mixed with the oil or colour yielding the impression. Powdered gold, silver, or bronze, is carefully rubbed over the impression, or gold leaf may be employed. It is preferred to prepare the paper with "animal size" and "satin white."

[Printed, 4*s.* 4*d.* Drawings. See Repertory of Arts, vol. 14 (*third series*), p. 207; and London Journal (*Newton's*), vol. 2 (*conjoined series*), p. 60.]

A.D. 1837, April 4.—N° 7337.

AMESBURY, JOSEPH.—"Certain apparatus for the relief or "correction of stiffness, weakness, or distortion in the human "spine, chest, or limbs."

This invention consists of:—

Apparatus to be applied to the deformity or contraction called "pointed toe."

Apparatus used "in the treatment of stiff or contracted knee "and elbow joints."

Apparatus "for correcting deformities or weaknesses of the "lower limbs."

"A prone inclined exercising plane" "for exercising the "patient with his face downwards while the body is placed "in the inclined position, and which is also used for other "purposes."

A "spine support," which brings "into action upon the body "of the patient the following forces, namely, suspension, traction, "depression, pressure, compression, support, resistance, "and antagonization or counteraction."

In the said exercising plane there is a sliding cushion for the patient to lie upon; there are also two pulleys in connection with the said cushion, and with an alterable weight, a footboard, handles, and other appurtenances. When the cord in connection with the weight bears against the lower pulley, the cushion (with the patient upon it) is drawn upwards, but when the patient thrusts against the handles the cushion is raised still higher by the muscular power of the patient, the weight then opposing his efforts. In this way exercise of an adjustable and gradual character can be obtained. Instead of the weight, a spring or weighted lever may be employed. Additional sliding cushions and other adjuncts enable other exercises to be practised.

[Printed, 2*s.* 8*d.* Drawings. See Rolls Chapel Reports, 7th Report, p. 185.]

A.D. 1840, March 28.—N° 8455.

KIRK, HENRY.—"Improvements in the application of a sub-" stance or composition as a substitute for ice for skating "and sliding purposes, part of which improvements may also "be employed in the manufacture of ornamental slabs and "mouldings."

[No Specification enrolled.]

A.D. 1840, November 5.—N° 8684.

KIRK, HENRY.—"Improvements in the application of a sub-" stance or composition as a substitute for ice for skating and "sliding purposes."

[No Specification enrolled.]

A.D. 1841, July 7.—N° 9016.

HAGEN, THOMAS.—"An improved bagatelle board."

The nature of this invention consists "in a false bottom or "moveable platform, with numbered holes or cups sunk in it at "that end of the bagatelle board where the holes or numbered "cups are usually placed, such false bottom or moveable plat-"form, or the bottom of the board without the intervention "of a false bottom, being so covered with maps, figures, or the "like devices," "and such holes being so arranged that instruc-"tion in various sciences may be combined with amusement in "playing games" with the said bagatelle board.

The drawings represent a bagatelle board with the said false bottom, "the other arrangements of the board being precisely "similar to those of ordinary bagatelle boards."

The rule of counting towards the game depends "upon "answers to questions from the adversary, which answers must "be the result of information derived from instruction." The said "false bottoms or platforms may be covered otherwise than "with maps, as for instance, with figures of animals, birds, "insects, and the like; or such maps, figures, or like device "may be fixed on the bottom of the board, without the intervention of a false bottom, the holes or cups being one in each "figure, and the questions asked by the adversary made to "relate to zoology, ornithology, or entymology, as the case may "be, the correct answering of which must also be the result of "information derived from instruction."

[Printed, 8*d*. Drawing. See Mechanics' Magazine, vol. 35, p. 249; and Inventors' Advocate, vol. 5, p. 178.]

A.D. 1841, November 2.—N° 9134.

KIRK, Henry.—" A substitute for ice for skating and sliding " purposes."

The said substitute is "to be laid in an extended, continuous, "even surface, which may be a horizontal surface, or an inclined "surface, or a curved surface."

The shoes for sliding may have their soles studded with nails that have convex heads.

When alum is used for the said substitute, the crushed crystals are melted, and a small proportion of sulphate of copper and of hog's lard are added to the melted mass. These ingredients are mixed thoroughly, and the whole mass is allowed to cool until it becomes of the consistence of cream; it is then either cast in a suitable mould, or upon the floor to be prepared.

When subcarbonate of sodium or sulphate of sodium is used, the crushed crystals are melted in their water of crystallization until they have lost one-fifth of their weight; sulphate of copper, or indigo dissolved in sulphuric acid, may be added as a colouring material.

When a mixture of the subcarbonate and sulphate of sodium is to be used, equal parts of these salts are mixed and treated as in the process with the subcarbonate only.

The inventor prefers to use carbonate or subcarbonate of sodium treated with sulphuric acid. In one method of preparation, the acid is added to the dried and powdered salt; in a second method, the acid is added to the mass of the consistency of treacle, which results from melting the salt and letting it partially cool.

In some cases sulphur may be used, and, when sliding is only to be done, polished metal may be employed.

[Printed, 6*d*. No Drawings. See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 28.]

A.D. 1842, March 4.—N° 9275. (* *)

CLEMENTS, James. — "Improvements in composition for "ornamenting glass and picture frames, and articles for interior "and other decorations, also for the manufacture of toys and "other fancy articles."

This invention "relates to the application of paste produced "from potatoes, in combination with other suitable materials," for the above purposes. The potatoes are to be "cooked as if "intended for the table," bruised, and mixed with some pul-"verised article, such as fine sawdust, turf, or the waste bark "from a tanyard, ground very fine, or any other fine powder "which can be had at small cost, the whole being worked into "a fine paste by rolling and beating." The composition is then fit for use, and may be cast into ornaments by the aid of moulds commonly used for such purposes.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 1 (*enlarged series*), p. 43; London Journal (*Newton's*), vol. 24 (*conjoined series*), p. 119; Mechanics' Magazine, vol. 37, p. 475; and Record of Patent Inventions, vol. 1, p. 87.]

A.D. 1844, March 6.—N° 10,092.

FORSTER, Thomas.—"Improvements in preparing composi-"tions of india-rubber and other matters for forming articles "therefrom, and for the coating of surfaces of leather and woven "and other fabrics."

One of the applications of this invention is "to make articles "by casting in moulds, such as balls, the legs, arms, heads, or "other parts of dolls or figures, or other articles." For this purpose a mixture is made by heat of the following ingredients: —India-rubber, shellac, gum copal, asphaltum, and arseniate of potash. All the said articles, in certain proportions (with the exception of the india-rubber), are melted in an iron pot. The resulting mixture is gradually mixed with the india-rubber in a *steam-heated masticating* machine. This composition is put, whilst hot, into iron moulds, which are retained together until the composition is cold. The proportion of shellac or resinous gums to the india-rubber is greater "than when the composition " is for spreading over the surfaces of fabrics or of leather."

The method of applying this invention to the waterproofing of leather and of fabrics is fully set forth. A method of making sheets of the composition is also described.

The machine or masticating instrument "consists of two " angularly grooved rollers, the angular projections of one work- " ing in the angular grooves of the other, and the two rollers are " placed in a pan, which is heated externally by steam in an " external jacket."

[Printed, 8*d.* Drawing. See Repertory of Arts, vol. 5 (*enlarged series*), p. 288; and London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 188.]

A.D. 1844, September 27.—N° 10,332. (* *)

RAMUZ, Alexandre.—(*A communication.*)—"Improvements " in sofas, wardrobes, ottomans, bedsteads, and other apparatus " for reclining or sleeping on, and in the construction of dining " and billiard tables."

One part of this invention relates to billiard tables that may be raised or lowered and converted into dining tables. The legs allow racks which carry the frame to move up and down by means of pinions, &c. The frame when raised rests on supports which fold into recesses; at each end is a flap which when in use is kept up by slide bolts. The table when lowered to form a dining table is to be covered with leaves.

[Printed, 1*s.* 6*d.* Drawings.]

A.D. 1845, March 26.—N° 10,574.

THURSTON, John.—"Improvements in parts of billiard " tables."

This invention consists in the adaptation and application of vulcanized india-rubber to the construction of the cushions of billiard tables.

A deal blocking is screwed to the wood part of the cushion. At the upper part of the blocking there is a groove to receive a slip of deal, which secures the upper edge of the cotton tick or swan skin covering "in the manner heretofore practised, the lower " edge of the tick or swan skin covering being nailed to the " under side of the capping" "before the cushion is fixed to the

" bed " " of the table, and the workman should be careful in " applying the tick or swan skin covering " " so as not to strain " it unequally over the elastic cushion or surface produced by the " prepared india-rubber." " Over the tick or swan skin covering " " is to be applied the covering of superfine woollen cloth, as " heretofore, and thus will be produced cushions of a superior " character for billiard tables to those heretofore made, the pre- " pared or vulcanized india-rubber offering an unvarying and " a superior elasticity under all circumstances of temperature to " which billiard tables are liable."

[Printed, 6*d.* Drawing. See Repertory of Arts, vol. 7 (*enlarged series*), p. 155; and London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 191.]

A.D. 1846, September 3.—N° 11,364.

COLES, JAMES.—" Improvements in apparatus for the prevention " and treatment of distortions of the spine and chest; also for " treatment of diseases of the spine and other disorders where a " recumbent position of the patient is required."

" The prone couch " consists of a horizontal frame supporting a flap, which is hinged to a sloping board that carries a moveable foot-board.

" The orthopædic sofa " " is a combination of the prone couch, " and of the means of performing various exercises in one " machine." A frame like a sofa frame rests on four legs; " within this frame, and forming its bed, lie those parts of the " prone couch which compose its horizontal expanding flap and " its sloping board." The sloping board is divided into two parts, and the three parts or flaps are hinged together; they are not attached to the sofa frame, but the middle flap is hinged to a square frame of wood called the " sliding frame," which traverses in a groove. The sofa frame has grooves which allow the three flaps to traverse when the sliding frame is moved backwards and forwards; this movement is effected by means of a screw. A hollow cushion is attached to the foot of the sofa, so as to form a scroll. This contains a strong spiral spring coiled round a spindle and covered by a brass cylinder; the said spindle may revolve or may be fixed by a rack and lever.

To use the spring cylinder for " the sawing exercise," a strap (six feet long) is coiled round the cylinder and has a handle at its extremity.

The "grinding exercise" can be performed with one or both hands (by a patient reclining on the couch) upon the handle or handles of a spindle that passes through the head scroll.

The box of the head scroll turns back, exposing a hand rail by which the "stretching exercise" can be performed.

The "rowing exercise" is performed by levers connected with the frame by means of a coiled spring.

The "swimming exercise" is performed by means of winders in the sides of the sofa frame.

[Printed, 1*s*. Drawing. See London Journal (*Newton's*), vol. 30 (*conjoined series*), p. 179.]

A.D. 1848, May 4.—N° 12,146.

STOCKER, Alexander Southwood.—"Certain improve-"ments in time teachers and boxes, show cards, or holders for "matches, pens, pins, needles, or other articles, and in the mode "or modes of manufacturing the same."

"Time teachers" are "articles intended for the purpose of "teaching children to read and understand the time indicated "on the dial of a clock or watch. In constructing the said "time teachers," a piece of sheet brass is submitted to pressure between dies that have therein or thereon the requisite figures, lines, and divisions of the face of an ordinary watch, "the dies "also having the necessary male and female portions to produce "two circular ridges or projections on which it is intended that "the outer extremities of the bands" [hands?] "may rest." When the sheet of metal has assumed the form given to it by the dies, it is further operated upon by a pair of cutting out tools so as to remove all the superfluous metal and give a clean edge to the article. This being done, the inventor rivets thereto "and at the centre of the dial a pair of hands made of elastic "steel, slightly curved or bent, so that the hands may turn "independently of each other upon the rivet, and that their outer "extremities may press upon the circular ridges or projections "with a force sufficient to keep them steady in any desired "position."

The improvements in the said boxes and show cards, and the method of constructing the same are set forth at length.

[Printed, 10*d*. Drawing. See Mechanics' Magazine, vol. 49, p. 474; and Artizan, vol. 7, p. 83.]

A.D. 1849, June 7.—N° 12,643.

PAYNE, Edward John.—" Improvements in marine vessels, " in apparatus for the preservation of human life, and in moulding, " joining, and finishing hollow and solid figures composed wholly " or in part of certain gums, or combinations of certain gums, " also for improvements in dissolving the aforesaid gums, and in " apparatus or machinery to be used for the purposes above " mentioned."

1st. Constructing a life boat of gutta percha, or gutta percha combined with india-rubber, and the "apparatus employed " therefor."

2nd. A method of moulding, joining, and finishing the above-mentioned figures. The gutta percha for moulding the said figures is chopped fine, masticated in water containing salt and oil of vitriol, and boiled. The mixture is pressed between highly polished iron plates, brushed and hammered or rolled; the resulting material is again boiled and brushed. The following is the process for moulding and joining a hollow figure such as a child's doll:—A piece " of the compound " is boiled until it is in a soft state, it is then "ready" for the mould. The moulds for each figure consist of a front mould, a front core, a back mould and a back core. The moulds are made to act upon the material by means of pressure. In jointing the shells thus formed, a red hot heater for an Italian iron is employed to the edges or rims of the said shells; they (the shells) are then pressed together and trimmed.

3rd. Manufacturing from the above-named materials waterproofing paints or varnishes.

[Printed, 1*s*. 2*d*. Drawings. See Mechanics' Magazine, vol. 51, p. 571; and Patent Journal, vol. 8, p. 128.]

A.D. 1851, May 29.—N° 13,648. (* *)

REYNOLDS, Joseph.—" Improvements in the manufacture of " cards usually denominated playing cards."

This invention consists in the application " of punches (having " rims with geometrical outlines) to the cutting of those cards " commonly called and known as playing cards, which outlines " may be varied at pleasure, and may consist of patterns formed " of rectilineal or curvilineal outlines, or of a mixture of both; and

" it is found that cards so edged afford a greater facility in holding " the pack in hand, shuffling, and dealing the same, and perforations of various kinds may also be added. When desirable, the " cards so perforated to be carefully pressed in a press, so that no " raised edge or irregularity may remain on the face or surface of " the card. The punch has two guide rods and is used in a screw " press of the ordinary construction, to which is added a plate for " guiding the strips of cardboard from which the cards are made " under the punch."

[Printed, 10*d*. Drawing. See Mechanics' Magazine, vol. 55, p. 459; and Patent Journal, vol. 12, p. 122.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 28.—N° 553. (* *)

BIELEFELD, CHARLES FREDERICK. — " Improvements in " billiard and bagatelle tables."

These improvements consist in " applying papier maché, or a " plastic composition in the nature thereof, in forming the beds " or surfaces of billiard and bagatelle tables." The papier maché, in one large sheet or in parts, may be screwed to a suitable framing of wood or iron, and its upper surface then planed true. The table may then be finished in the usual manner. The inventor prefers that the bed of the table should be manufactured according to the manner described in his Specification, A.D. 1851, No. 13,531.

[Printed, 4*d*. No Drawings.]

A.D. 1852, November 1.—N° 606.

JAQUES, JOHN, the younger.—(*Provisional protection only.*)— " Improvements in chess and draught boards."

" I construct the board with flaps and hinges to enable it to " form a flat board for playing, and when not in use to be folded " *up in the form* of a box or tray. The chess or draught men

" have pegs which take into holes in the centre of the squares of " the board, and in the event of the game being interrupted " by simply turning up the flaps at the side of the board a " spring or springs comes or come into action, and the men " are retained in their position, and so firmly that the board " may, if desired, be folded up into the shape of a box without " the men falling or leaving their position."

[Printed, 4*d.* No Drawings.]

A.D. 1852, November 27.—N° 893.

LOTSKY, John.—(*Provisional protection only.*)—" Improved " playthings hereby denominated pestalozzian gymnastic play- " things."

" This invention consists in and has reference to the formation " or construction of playthings," " of gutta percha, or other " analogous substance."

" Fortification work" is made of considerable size and of several pieces " so cut up as to require some skill to put them together." The battering down of this fortification is effected by means of large gutta percha balls.

Figures of animals may be placed on pedestals to be knocked down with the said large balls.

Enlarged nine pins, dissected maps, pyramids, columns, ordinary garden implements, &c., may be made of gutta percha (excepting those parts where iron or steel is required); " the gutta percha or " other analogous substance may in most cases be employed " in combination with a basis or frame work of other light " materials."

The inventor intends " by all this to accustom the players to " the sight of large outlines and the handling of large masses " comparatively heavy."

[Printed, 4*d.* No Drawings.]

1853.

A.D. 1853, January 22.—N° 164.

SHARPLES, William.—(*Provisional protection only.*)—" Im- " provements applicable to apparatus used for marking or scoring " at billiards and other games."

"My improvements consist in an adaptation for scoring or "marking at billiards and other games, whereby the number of "points or games played are registered by the act of marking; "thus, for instance, I connect the marking instrument to an "index which moves therewith, so that a motion of the one must "cause a proportionate motion of the other, by which arrange-"ment the proprietor or other person can at any time by inspect-"ing the index ascertain the number of points or games that "have been scored."

[Printed, 4*d*. No Drawings.]

A.D. 1853, March 5.—N° 554.

SMITH, Mary Ann.—"Improvements in the manufacture of "toys, models, and other like articles of ornament or utility."

This invention consists in "the employing of wire, with or "without pasteboard or thin wood, covered with any thickening "adhesive composition, when wire forms the skeleton or prin-"cipal framework of toys, models, and other like articles of "ornament or utility."

Pasteboard is first cut to the desired form of all flat or nearly flat surfaces. "Bonnet wire," or other thread-covered wire "is "next to be divided into suitable lengths for sets of legs, frames, "and the like."

The bonnet wire facilitates "the attachment of wire to wire, or "of wire to the pasteboard, wood, tin-foil, or other materials "employed, as this is readily effected by stitching them with a "needle and thread." When the skeleton of a toy is thus formed, the flat surfaces "may be coated with tinfoil, oiled or varnished, "which prepares it for the next operation." "To give the wire "framing suitable substance, communicating to it also any fluted, "figured, or other appearance that may be requisite," it (and the pasteboard, where necessary) is covered "with a composition of "whitening mixed with glue or size, such as is ordinarily used "by carvers and gilders," "so that the wire is embedded in the "material, thereby serving to strengthen it, however light in "appearance; and at the same time its plasticity favours any "ornamental embossing of the surface, and which may be fur-"ther heightened in effect by painting, varnishing, gilding, or "bronzing." "Imitative upholstery" "may be completed in "the usual manner."

[Printed, 4*d*. No Drawings.]

A.D. 1853, March 22.—N° 703.

FUTVOYE, Frederick.—" An improved apparatus to be em-" ployed in games of chance."

" One of the objects of the present invention is to dispense " with the use of dice," " and to substitute therefor a series of " numbers, letters, signs, or devices ranged round a circular or " other table, on which is placed a circular rotating disc or wheel, " which must be mounted on a centre or spindle, and may, if " thought desirable, be also provided with numbers, letters, signs, " or devices. The surface of this circular table may be covered " with cloth, leather, or other material, and divided radially into " compartments, each of which may be provided with a number, " letter, or device. Supposing horses, yatchs, or other figures " are intended to be played with," " they are placed on the table " in any pre-determined order; and the rules of the game having " been previously decided on, the figures are to be moved round " or upon the rotating disc according to the numbers on the " stationary part of the table, against which any given or index " point on the rotating disc or wheel may stop. The stakes may " consist of counters or small coins, and previous to commencing " the game each player must deposit in a dish or bowl, at the centre " of the rotating disc, the stakes that may be determined on."

If preferred, the moveable disc may be made stationary by the insertion of a pin; " the numbers or figures whereby the horses " are advanced round the course may then be obtained by means " of a teetotum or other suitable contrivance."

In a modification of the apparatus " only the centre of the disc " rotates; " that part upon which the horses, yachts, or other " figures are placed being fixed, and forming a portion of the " stationary table." A fixed central index is used.

[Printed, 6*d*. Drawing.]

A.D. 1853, May 5.—N° 1102.

LARBAUD, Charles.—" A new system of trigger, applied to " play arms, such as pistols, fusils, rifles, guns, and cannons."

The drawings show a pistol made according to this invention. In a tube attached to the stock a helical spring is fixed. When the pistol is ready for firing, the said spring is compressed, its *free and outer end* bearing against a piston that is fixed on the end of a moveable tube that encloses the above-mentioned fixed tube. The external barrel of the pistol encircles the said tubes that contain the spring, and is prolonged beyond the position of these tubes when the spring is compressed. When the pulling of the trigger releases the spring, the piston compresses the air in the external barrel between itself and the projectile, and throws it out "with great noise and detonation."

The trigger action is as follows :—The tube connected with the piston has a ring at its inner extremity. When the piston is rammed home by means of a ramrod, a blade spring at the inner or stock end of the external barrel, presses against the face of the ring and keeps the helical spring in a state of compression, and the piston at the extremity of its travel within the external barrel. The end of the blade spring is bent down in front of the trigger, the tail of which enters a hole in the said bent portion of the blade spring. Therefore, upon pulling the trigger in the usual way with the finger, the blade spring is pulled away from the ring, the piston is acted upon by the helical spring, and the projectile is forcibly ejected.

[Printed, 6*d*. Drawing.]

A.D. 1853, June 1.—N° 1344.

LEMAIRE-DAIMÉ Jacques Louis.—(*Provisional protection only.*)—" Certain improvements in play arms, such as play cannons, pistols, and guns."

A play pistol is shown in the drawings having a stock to which a piston is fixed by means of a metallic rod. The piston rod is long enough to enable the piston to travel nearly to the end of the tube which constitutes the barrel. The piston being pulled to the breech of the pistol and a plug being inserted in the muzzle, when the handle or stock is forcibly pushed towards the barrel, the piston compresses the air in the barrel, as in " ordinary popguns," and the plug (as a shot) is forcibly driven out or projected.

This toy is " of metal—zinc, for instance—run into copper " moulds."

The improvements consist in :—

1st. Preventing the handle " from turning in its action " on the plug. The piston rod is square in section.

2nd. " Limiting the course of the piston " " by means of a little " *cylinder stop.*"

3rd. "Arranging the pistons in form of capsules reversed, so "that, notwithstanding use, they produce always the same effect "at the time of the discharge."

The previously tinned iron rod or piston is introduced into the interior of the handle during the casting of the said handle.

The stop or cylinder at the breech end of the barrel is placed upon the piston rod previous to the fixing of the piston; the barrel is soldered to the trigger piece to which the stop is fixed by pins.

[Printed, 6*d.* Drawing.]

A.D. 1853, July 2.—N° 1589.

JAQUES, John, the younger.—"Improvements in the manu"facture of chessboards and chessmen."

The objects of this invention "consist in the manufacture of "chessboards and chessmen, so that, firstly, if a game of chess "be played at intervals of time from its commencement, the "position of the pieces at the end of each interval may be easily "and readily secured; and, secondly, that the chessboard and "the pieces thereon may be conveniently portable."

The chess board has "circular holes in the middle of the squares, "into which a pin in the bottom of each chessman enters easily." Two thin metal plates (let into the chess board so as to be in the middle of the thickness thereof) move in guides, and have "holes "of pear-like shape" "corresponding in position to the holes in "the squares, being immediately underneath them." When the conclusion of a game of chess is postponed, the plates are pushed inwards until a catch rises and prevents their return. In this position of the plate the small end of the pear-shaped holes retain the chessmen in their places. When the catch is pressed down, or removed from the plates, the chessmen are set free.

The chessmen are unusually low and all of the same height; "when, therefore, the board is doubled up with the chessmen "fixed in it, the thickness of the fold will be the least possible, "and may be conveniently placed in a cover, and secured by lock "and key."

[Printed, 8*d.* Drawings.]

A.D. 1853, July 21.—N° 1725.

MAYER, Simon Charles.—"An improved domino bearer."

This invention "consists of a box of wood, metal, pasteboard, "or any other convenient material, which is divided at its upper

" extremity into a certain number of compartments or cases of " the size of a playing domino. These cases are open at the top " and in front of the box which they form, so that the domonoes " may be inserted into them, and so that they may be seen when " placed there. The box itself may have a handle by which the " player can hold it, or it may stand in a slanting position on a " pedestal or stand which is fixed to it, or into which it may be " stuck whenever required. Each of the players is provided with " a domino holder, as described, into which he puts the dominoes " as he takes them up, and thus he is no longer obliged to keep " them in his hand, which is very troublesome, or to put them on " the table, where they may be upset by the slightest shaking."

The drawings show a domino holder with a handle and another on a fixed pedestal. In the former holder, the stem of the handle may be inserted, when required, into a loose pedestal. A socket is shown at the back of the holder to receive a cigar, and "a " gutter-like cavity in front of the holder to put a burning cigar " in." A little drawer contains the matches, &c. The inventor also reserves to himself "the variety in which similar contrivances " are added for holding a pipe, either in front, on the side, or at " the back of the domino holder."

[Printed, 6*d*. Drawing.]

A.D. 1853, August 26.—N° 1982.

DE VARROC, Eugene.—"Certain means of depriving caout- " chouc of all unpleasant odour, and of imparting to it various " agreeable perfumes."

1st. "Exposing caoutchouc or articles coated with caoutchouc " in baths containing in solution infusions, essences, decoctions, " extracts, &c. of such vegetable matters as flowers, plants, and " roots."

2nd. Subjecting caoutchouc, or the said articles, "to the action " of currents of air or vapors."

3rd. Immersing the caoutchouc, or the said articles, "in baths " containing solutions of lime."

Two of the above-mentioned processes may be combined, and the process or processes may be used in connection with other means.

The principal vegetable matters used in the said solutions are, verbena, lavender, " the root of the whorl-flowered bent-grass

" (vetyver)," "camomile flowers, elder flowers, and powder of " Florentine iris." One process consists in cold immersion in the said solutions, and subsequent drying in a drying stove and in the air. The process to be employed "for removing unpleasant " smell from articles, such as india-rubber bands, thick gum " rings for babies, india-rubber balls, sponge bags, and other " articles of a similar class," consists in submitting the said articles to the action of an odorous solution (preferably the elder flower solution) mixed with spirits of wine, oil of lavender, and hydrochloric acid. To deodorise india-rubber balls, the solution is made to act upon the interior as well as the exterior of the said balls.

The Provisional Specification mentions the application of " several disinfecting agents " to the above-mentioned purposes."

[Printed, 10*d.* Drawing.]

A.D. 1853, December 15.—N° 2915.

WHITAKER, Benjamin.—" Improvements in the manufacture " or production of useful toys."

This invention " is intended to be used as a substitute for the " ordinary wooden 'bricks' as already adopted and applied for " the amusement of children. Instead of such 'bricks' " the inventor makes " the building details of wood or other suitable " material, in the form of circles, segments of circles, squares, " angles, hexagons, octagons, and other shapes; such details " being made to present great variety of appearance, either by " being made of different woods or of the same wood, painted or " stained in different colors. In the preparation of these articles " for sale and use, large or small quantities of them may be put " up to be sold in boxes. It is obvious that by the introduction " of these different forms an almost endless variety of designs " may be produced."

The drawings show " one of the many varieties of architectural " erections of which the improved system is capable." In this " particular building," "angular span-pieces," "plain cylindrical " columns," "semicircular pieces," "angular pieces " "formed " with curvilinear lower sides," and "annular pieces," are employed.

[Printed, 6*d.* Drawing.]

1854.

A.D. 1854, May 8.—N° 1026.

PFERSDORFF, Carl.—(*Provisional protection only.*)—" A new " toy or aerial top."

" A light frame is made of wire in the form of a windmill, with " any number of sails or vanes, the said vanes being covered with " paper or other suitable material. This windmill, which I call " an aerial top, when caused to revolve quickly in an horizontal " direction will rise to a great height, in consequence of the pres- " sure of the inclined vanes against the air. The means which I " employ to give the requisite revolving motion to this aerial top " are as follows :—To a wooden or other handle a pin is fixed, " and upon this pin is placed a tubular piece of wood having " notches at the top, to receive the wire arms of the aerial top or " windmill; one end of a string or cord is passed through or " otherwise attached to the tube. The aerial top or windmill " being placed on the tube with the wire arms in the notches, the " handle is held in a vertical position in the left hand, and the " tube and aerial top or windmill caused to revolve by alternately " pulling and releasing the string or cord with the right hand. " As soon as the requisite velocity has been thus obtained the " cord must be pulled quickly, and a slight motion of the left " hand disengaging the aerial top from the handle, the top will " rise in the air to a height in proportion to the speed or velocity " of revolution that has been imparted to it.

" If the toy is used in a room it will ascend to the ceiling and " continue to revolve there for some seconds, in which case the " centre of the upper part of the top should be provided with a " projecting piece of cork or other elastic or soft substance to " prevent the same from injuring the ceiling."

[Printed, 4*d*. No Drawings.]

A.D. 1854, May 27.—N° 1181.

MURDOCH, James.—(*A communication.*)—" Improvements in " toy pistols."

"The invention consists in certain arrangements in the con- " struction of toy pistols, whereby they may be discharged by one " hand, as ordinary pistols are, and also in the application of per- " cussion caps to such pistols."

The stock of the pistol has the outside barrel fixed to it, and carries a piston rod which passes through a block in the breech of the inner barrel. The inner barrel has the piston fitting therein, and also carries the trigger, a slot being made in the external barrel for the said trigger to pass through. The internal barrel acts as a pop-gun, a plug being inserted in the muzzle thereof. When the trigger is drawn back, the air in the moveable barrel becomes compressed and expels or shoots out the plug. To prevent the barrel being driven in during the insertion of the plug, a notch in the before-mentioned slot retains the neck of the trigger, and thence the barrel, until the trigger is pulled. The moveable barrel may be restored to its place by a spring after each discharge.

A helical spring, fixed to a projection above the external barrel, tends constantly to keep the hammer on full cock. When the trigger is pulled, a stud attached to the moveable barrel strikes upon the tail of the hammer and brings it down, thus exploding the percussion cap.

In another construction of pistol there is only one barrel containing a piston. Upon pulling the trigger the said piston is forced forward by the upper end of the trigger, it being mounted " as a lever of the first order" for that purpose. This construction is not mentioned in the Provisional Specification.

[Printed, 6*d*. Drawing.]

A.D. 1854, July 3.—N° 1455. (* *)

GUICHARD, Edouard Auguste Desiré.—(*Provisional protection only.*)—"Improvements in ornamenting the surfaces of " various articles and fabrics."

The invention consists in employing as a flock surface to various articles, such substances as "sand, sawdust, or powdered wood, " pulverized leather, metals, and metallic salts, talc or mica, bone, " ivory, or horn reduced to powder, flax, hemp, cotton, moss, " lichen, or any other textile plants, and generally all substances, " other than wool, capable of being reduced to powder, whether " animal, vegetable, or mineral, and either in their natural state, " or dyed or stained. These substances may either be employed " alone or in combination with various other matters," "and " they may be applied to the surfaces of the articles or fabrics, " either by means of the ordinary flocking varnish, or by means " of solutions of caoutchouc or gutta percha."

The flock may be used for ornamenting dolls, childrens' playthings, &c.

[Printed, 4*d*. No Drawings.]

A.D. 1854, September 5.—N° 1939. (* *)

TRAPPES, HENRY.—(*Provisional protection only.*)—" A process " for the preparation of leather, to be used in the manufacture of " a new flock, and for the manufacture of the same, to be used " and applied in lieu of flock made from pounded or ground wool " and woollen materials, heretofore commonly used in the manu- " facture of painted, printed, and dyed decorating papers, carpets, " oil cloths, and other things; and also to be used as a paste or " pulp for the manufacture of all kinds of paper, parchment, and " pasteboard, of toys, of ornamental and other picture frames, of " mouldings, architectural and sculptural ornaments, and other " things."

This process consists in grinding the leather in a mill upon the principle of a pepper mill, but particularly arranged, infusing it in water for a day or two, washing in plenty of water, bleaching " by alkalines & acids, in order to get rid of the tan;" grinding it in millstones, then draining, washing, dyeing, and drying. In making paper, toys, picture frames, &c. with " leather " pulp or paste, it must when taken from the millstones undergo " several washings, more or less, according to the quality or " degree of perfection required for the article or thing to be " manufactured."

[Printed, 4*d*. No Drawings.]

A.D. 1854, November 15.—N° 2422.

JOHNSON, JOHN HENRY. — (*A communication from Daime Lemaire.*)—(*Provisional protection only.*)—" Improvements in air " pistols."

1st. So arranging the parts of the said pistols " as to admit of " the pistol being discharged by one hand."

2nd. " Constructing such pistols with two barrels, so as to " discharge from both simultaneously; or one barrel may be " made to contain two projectiles side by side, which would be dis- " charged by one thrust of the piston."

3rd. " The forming such pistols with moveable or sliding " *barrels and fixed* pistons."

4th. "Constructing air pistols with a moveable hammer, which " is caused to strike the 'nipple' at the instant the pistol is " discharged."

"In order to admit of the pistol being discharged with one " hand, a stop or thumb-piece is formed on the handle of the " piston and another on the fixed part of the stock; in these " stop pieces are inserted the thumb and fore-finger, and the " piston may then be easily pushed forward by the action of the " thumb and forefinger alone. The piston rods in these pistols " are not made round, but are either oval, triangular, rectangular, " or polygonal in section, by which means the handle is not liable " to turn round thereon, and thus get out of position. In double-" barelled pistols both rods are secured to one common handle, " forming the butt end of the pistol. In pistols where the barrel " or barrels are made to slide back a finger piece or stop is at-" tached thereto, and the piston rod is fixed into the butt end " of the pistol, which in this case is made in one piece with the " rest of the stock. The movement of the hammer is effected " by a link-piece, attached at one end to the sliding barrel, and " at the other to a slotted tail piece on the under part of the " hammer."

[Printed, 4*d*. No Drawings.]

A.D. 1854, November 30.—N° 2517. (* *)

QUIQUANDON, JEAN BAPTISTE ANDRÉ.—(*Provisional protection only.*)—"Certain improvements in manufacturing corks, " and in the mode of employing their residues or wastes."

A machine is described for making corks, which, instead of shavings, gives powder as a refuse. This dust or powder amongst other applications may be used for stuffing bedding, dolls, &c.

[Printed, 4*d*. No Drawings.]

1855.

A.D. 1855, January 26.—N° 206. (* *)

JOHNSON, JOHN HENRY.—(*A communication from André Marie Préverand.*)—"Improvements in the construction of kites, and " in the application thereof to the purposes of carrying lines and " *of signalling.*"

These kites are constructed so as to be easily folded or extended when required. The main cord is attached to the kite at different points of the belly band, according to the strength of the wind. A float is attached to kites, whereby they are enabled to travel in an oblique direction with the wind. Kites may be used wherein the cloth is not stretched tight; by this means a better action of the wind is obtained. Kite tails are employed that are "composed "of a number of pallets or discs."

The frame of the kite may be of any dimension according as the kite is "intended as a toy," or otherwise, and it (the frame) is composed of two straight flat laths of wood, "laid one over the other "and crossing at their centres, where they may be secured either "by a knotted cord or piece of wire," so that the two laths may be "shut up together parallel when not required for use." The sail portion of the kite is secured permanently to one of the laths at each end, whilst it is merely attached temporarily to the two extremities of the other lath. The tail is composed of a number of thin boards, through the centre of which is passed the tail cord.

[Printed, 8*d*. Drawing.]

A.D. 1855, February 6.—N° 276.

TRAPPES, HENRY.—(*A communication.*)—(*Provisional protection only.*)—"A process for the preparation of leather to be used "in the manufacture of a new flock," to be used (amongst other uses) "as a paste or pulp" for the manufacture of toys.

The leather is ground in a conical mill, put into water, where it is allowed to "infuse;" it is then washed, bleached, and ground again, by means of millstones, "until the pulp or paste shall have "acquired the degree of fineness required." The pulp is then drained, washed in water and dyed. "The leather pulp or paste "must then be dried atmospherically, if possible, and it must "then be re-passed and re-ground in a mill, simular to the one "used in the first instance, for the trituration of the leather but "somewhat finer, so as to reduce it to a powder, after which it "must be sifted through a seive.

"For the purpose of manufacturing paper, parchment, and "pasteboard with the said leather pulp or waste, it must when "taken from the millstones undergo several washings, more or "less, according to the quality or degree of perfection required

" for the article or thing to be manufactured. The same process " must be used for making the pulp or paste for the manufacture " of toys, picture frames, and other articles and things. The " invention consists in the above-mentioned preparation of the " leather, and in its application to the above-mentioned purposes, " instead of, and as a substitute for, wool or worsted, and other " materials hitherto employed or used in the manufactures " aforesaid."

[Printed, *4d*. No Drawings.]

A.D. 1855, April 19.—N° 875. (* *)

JOHNSON, John Henry.—(*A communication.*)—" Improvements in the manufacture of articles of hard india-rubber or " gutta percha, or compounds thereof, and in coating or covering " articles with the like materials."

This invention consists in the manufacture of a variety of articles, amongst which are dominoes, chessmen, draughts, and toys, from india-rubber, gutta percha, or compounds thereof, "by " first moulding them, while in a soft state, and then submitting " them to a high degree of heat in steam-heaters or to the action " of a sulphur bath. The moulds may sometimes be composed " of plaster, but it is preferred to make them of porcelain, glass, " metal, or gutta percha." During the process of vulcanising the article may be imbedded in magnesia, which causes it to come out of the mould quite black.

[Printed, *4d*. No Drawings.]

A.D. 1855, October 27.—N° 2402. (* *)

GEYELIN, George.—(*Provisional protection only.*)—" An improved construction of perambulator."

This perambulator can be converted into a rocking chair. This object is accomplished by mounting the body of the carriage on a pair of rockers and by fitting wheels thereto "by means of " clamps or other analogous contrivance which will permit of " the ready application and removal of the wheels and axles." " The propelling handle also is connected temporarily" to the body of the carriage. "When the wheels are removed, the " perambulator will be converted into a rocking chair; and when " provided with a double body, it may be employed as a substitute " for a rocking horse."

[Printed, 4d. No Drawings.]

A.D. 1855, December 29.—N° 2943.

REDFERN, Herbert.—" Improvements in skates."

In the skate, which forms the subject of this invention, " no " wood, straps, or buckles are required in the make or in the " fastening thereof." But, " as many persons may be too timid " to at once use the skate as the inventor intends it to be used, provision is made for the use of straps.

" The heel of the boot is secured by a cap and spike or spring. " A steel spring runs above the skate iron, being secured at the " heel to the said iron, from whence it rises to suit the hollow of " the boot, until it arrives at the portion where the ball of the " foot would press, where it is again secured, slots being so made " therein as to allow free play to the spring, and short spikes being " placed to prevent the sole of the boot sliding. The spring " passing on, terminates in a regulating slide secured to spring by " rivets, such rivets moving in slot holes by means of a screw, " permitting the slide to be regulated to any size of boot. The " end of this slide turns up, and on being pressed down by the " toe, allows the foot to come down to the spring and the boot is " completed " [completely ?] " secured to the skate."

[Printed, 6*d*. Drawing.]

1856.

A.D. 1856, February 9.—N° 347.

MARTIN, Edward.—(*Provisional protection only.*) — " Im- " provements in cricket bats."

This invention " consists in making the handle (which is firmly " fitted and glued into the bat) of several pieces of malacca cane, " longitudinally glued together and turned to suit the hands."

[Printed, 4*d*. No Drawings.]

A.D. 1856, February 26.—N° 493.

THOMPSON, Francis.—" An improvement in skates."

This invention " consists in providing large surfaces for the " support of the heel and ball of the foot, by which means the " body of the skate may be formed of a straight piece of wood, " metal, or other material."

Two apertures with narrow necks are made "in the upper part " of the skate iron," and the heads of two screws, made with square shoulders, are inserted therein; "the narrow necks of the " apertures prevent the screw heads from being drawn through " them." The upper edge of the skate iron is fitted "in a longi- " tudinal groove formed along the bottom of the piece of wood " or other material of which the body of the skate is composed," and the screws are passed "through holes made in the body of the " skate." The upper part of the body around the parts where the two screws are inserted, is sunk or hollowed out, and "a cir- " cular or other conveniently shaped piece or plate of wood, " metal or other suitable material" is mounted or screwed upon each of the said screws. The said "pieces or plates form the " bearing surfaces or rests for the heel and ball of the foot."

The drawings show a skate in which the body is composed of a straight piece of wood or other suitable material, and the above-mentioned plates are circular, and are screwed down into seats or hollows made to receive them in the body of the skate; metal nuts fit on the screws over the plates.

In another instance, sheet iron plates are screwed on to the body of the skate by the screws which hold the skate iron and body together; the heads of the screws "are sunk in apertures in " the upper part of the iron."

[Printed, 6*d*. Drawing.]

A.D. 1856, April 5.—N° 828.

MARTIN, Edward.—(*Provisional protection only.*)—"An im- " proved leg guard."

This invention "consists in making leg guards (used in the " game of cricket) of open cross-bar work or net work, formed " of pads and guards, instead of making them, as hitherto, of " one continuous piece or web."

[Printed, 4*d*. No Drawings.]

A.D. 1856, April 26.—N° 1004. (* *)

WALKER, Thomas.—"Improvements in playing cards."

These improvements consist, first, "in forming playing cards of a " circular form, or of a figure having five, six, seven, eight, or other " number of sides more than four," "or of an elliptical form, or " *of portions of* ellipses, or circles." Secondly, in "marking or

" placing the entire number of spots or pips denoting the value " of the card near one edge, or near both edges of the cards." The figures of the king, queen, and knave may also be printed near the edges of the cards, and have their names printed. The number of spots on each card may be marked in numeral characters.

[Printed, 6*d*. Drawing.]

A.D. 1856, May 23.—N° 1235.

GEDGE, JOHN.—(*A communication from Antoine Escafet.*)—(*Provisional protection only.*)—" Improvements in machinery " or apparatus for the manufacture of billiard cues, or similar " articles."

" I propose to taper billiard cues by the use of two bars or " puppets, fixed in a framing supporting four conductors; two " of these conductors are to be horizontal, and are to work backwards and forwards in chasings made in the puppets or bars. " The relative distances of these conductors is to be governed by " the distances of the carriage rods. The moveable piece of these " conductors is put in motion by screws, and when it occupies a " convenient position, the three pieces, of which these conductors " are composed, will be permanently fixed by bolts which traverse " them. The two other conductors are moved by screws in a rise " and fall movement, while the vertical conductors easily maintain their places by the pressure of the screws. The horizontal " ones are secured in their positions by bolts on the exterior of " the puppets aforesaid; the carriage rests on these latter conductors, and the rods which are adapted to the carriage pass " into grooves cut both above and below in the conductors. The " functions of the vertical conductors, and moveable piece, will " be to press the slots or grooves which traverse the carriage, and " these grooves will exercise a pressure on the cue to form it into " the desired shaped. The cue to be formed will pass into a circular opening made in the middle of the carriage; screwed " laths or rods will also pass into the orifice of the carriage, and " as these screws are put in motion by gearing (not necessary to " explain here), it will be perceived that their evolutions on each " other, guided by nuts in the carriage, will not only cause the " cue to be tapered at will, but smooth or polish the wood in the " same operation."

[Printed, 4*d*. No Drawings.]

A.D. 1856, July 21.—N° 1718.

FISHER, John Pursloe.—" Improvements in cues used at " billiards, bagatelle, and other similar games."

" The ordinary billiard cue is a wooden stick, with a piece or " pieces of leather forming the point or head, which is glued or " cemented or permanently attached to the end of the stick. By " my invention I construct the head and the end of the stick in " such manner that the head can be readily removed and replaced " by another. One mode of doing this consists in attaching " small spring clips or claws with dovetailed ends to the stick. " The head is made of leather or other suitable material, stamped " or shaped to correspond with the clips, which are pressed upon " or into it by means of a ring, which slides over the clips, or " which is screwed upon them.

" The form of the clips or holder admits of variation. When " the head becomes injured or worn by use, or when for any " reason it is required to change the head, the clip or holder is " slackened and the head is removed, and a new one applied and " secured as before."

The drawings show many arrangements for attaching the head to the stick, and many kinds of heads or tips. In one instance, besides the spring clip, there are two ferrules, one of which is secured to the stick by a pin. Another attachment has only one ferrule. In a third instance, a shank in the form of a cross is used instead of a spring. The top of the screw ring receiving the tip may be serrated. The outside ferrule may be attached directly to the shank. The shank may terminate in a flat disc, which forms a cup into which the screwed head or the shanks may be screwed into the stick. The heads or tips may be made of leather or gutta percha combined with leather.

[Printed, 10*d*. Drawing.]

A.D. 1856, September 26.—N° 2256. (* *)

PELLEN, Marius.—" Rendering impermeable by gas caout-" chouc, gold beaters' skin, paper, gauze, and similar materials " used for things adapted to receive an ascending force, such as " balloons, aerostatic machines, toys, &c., &c., by the application " of a peculiar varnish."

" The caoutchouc prepared in England is particularly applicable

" for making these kind of balloons, but it must first be submitted " to the vulcanizing process."

" The different kinds of varnish employed are composed of " amilacious substances, such as enulin, of lichnin " [lichenine ?] " of gum arabic, of adragant, of musilage " [mucilage ?] " and " vegetable substances, mixed with some kinds of gum, of sugar, " gelatine, dextrin, of glucose, of albumen, of collodium " [collodion ?], " submitted to a certain preparation without ether of " gelatinous matter, that is, of pure gelatine of fish skin and of " glue. These different kinds of gum are prepared with pure " water diluted with alcohol." The varnish is spread on the balloons " after they have been properly distended with gas."

To fill the balloons, the pressure of the gas is regulated by weights upon a gas holder, and is shown by a pressure gauge.

A piece of unvulcanized india-rubber is introduced into the mouth of a balloon before inflating it; when the inflation is completed the mouth is tied round with waxed thread; or the long mouth of the balloon may be stretched and tied into a knot.

By means of this invention toys may be made whose weight is nearly that of air.

[Printed, 4*d*. No Drawings.]

A.D. 1856, November 3.—N° 2578.

MIDDLETON, SAMUEL.—" Improvements in the manufacture " of certain articles of leather without seams."

1st. Exerting pressure upon lasts " acting upon pieces of " leather, and made to pass therewith through plates or dies of " metal," so that a flat piece of leather assumes the shape of the last.

2nd. " Manufacturing certain articles out of the skins of the " tails and other parts of certain animals." One of the said articles is " a covering for the handles of cricket bats instead of " string." For this purpose, the said tail is prepared by removing the meaty portion therefrom (by means of a wire), placing it in lime, and stretching, drying, and currying the leather upon a taper mandril. Each tail (preferably of an ox) whilst in a soft state has a " collapsible hollow mandril " inserted within it, the whole length of the tail. A solid mandril is then forciby pressed into the hollow mandril, and the mandrils and tail are forced successively through certain holes by means of a screw. The leather thus stretched upon the mandrils is dried by means of gas; the tails are then curried. To accomplish the currying process, the mandrils and tails are placed in a machine in which sliding pieces of gun metal are moved to and fro with pressure. During the backward movement of the frame carrying the sliding pieces, it is found necessary, in practice, "to take the pressure off the leather;" this is done by means of levers and studs that operate, at the right time, to remove the pressure from the sliding pieces. "The " outer surface of the leather may then be japanned or otherwise " blacked and finished." "The leather may also be moistened " and dried in a stove, whereby it is rendered stiff and firm."

[Printed, 2*s.* 2*d.* Drawings.]

A.D. 1856, November 14.—N° 2685.

HUART, Adolphe Emanuel.—(*Provisional protection only.*) —"An improved toy for the use of children."

"I propose to prepare a casing either of caoutchouc, silk, or " other suitable substance or material, in such manner that when " distended it will take the shape of a ball; a portion of the " material is to be gathered together, so as to form a neck. I " propose to inflate this casing with hydrogen (or other) gas, and " then secure the neck aforesaid, in the most convenient and " secure manner. A cord or string will be fastened to this neck, " either by insertion, or by enclosing the stuff therein, and the " whole will be covered by one or more coats of varnish. When " this toy is so made, it will be self-suspensive as a balloon, and the " child moves it about at pleasure with the string. The extreme " lightness of this toy will allow of its use in drawing rooms and " other places where other toys would be inadmissable."

[Printed, 4*d.* No Drawings.]

A.D. 1856, November 17.—N° 2715.

MICHEL, Constantin, and MARET, Isidore Antoine.—(*Provisional protection only.*)—"Making atmospherical observa-" vations."

"This invention consists of balloons of all forms, dimentions, " and colors, made of india-rubber and filled with hydrogen gas, " and coated with a varnish of one pound (avoirdupois) of ising-" glass in one pint of water; secondly, gum varnish and carmine, " to which is added alkali. The whole of these ingredients are "mixed together and applied with a brush. The balloons are "destined to serve as a placing" [plaything ?] "for children and "to make atmospheric experiments, &c."

[Printed, 4*d*. No Drawings.]

A.D. 1856, December 24.—N° 3053.

NANI, Guiseppe Antonio Giovanni.—"Improvements in "toys for the use of children."

The object of this invention "is to construct forms or figures "of any description, for example, that of the horse or other "animal, giving thereto the motion or movement natural to the "animal so represented, or to other forms or figures any peculiar "motion that may be desired. This is effected by means of "combinations of metal, caoutchouc, or other elastic material "used in the form of springs, or otherwise placed beneath the "figure. In some cases motion is by reason of the weight of the "child when placed upon the figure; in others the combination "of springs or other elastic material may be acted upon by simply "dragging the entire construction along upon wheels, giving the "peculiar motion desired, or the elastic combination may be put "in motion by any other means."

The drawing shows a horse; "the apparatus below the figure "enables it to imitate all the natural movements of the living "animal." Two planks are placed one above the other, and the animal proposed to be represented is placed on the top of the upper plank. Springs are attached to and placed between the two planks, and by their motion give the necessary elasticity to the figure. In order to prevent the animal from falling or swerving on either side, one end of an iron rod is affixed to the upper plank, and the rod is caused to slide up and down through the aperture in the iron plate which is firmly fixed to the lower plank, and thus the figure is kept always in an upright position.

[Printed, 6*d*. Drawing.]

1857.

A.D. 1857, April 14.—N° 1050.

LAVIGNE, Charles Jean Marie.—(*Provisional protection only.*)—"Improvements in machines or apparatus for swinging,

" see-sawing, revolving, and for performing other exercises or " amusements in the air."

With respect to see-saws, the axis is mounted "on a pillar, " which is free to rotate; it is furnished with a crank which im- " parts or regulates the up and down motion of the see-saw. " Masts and sails are raised from the ends of the see-saw to " steady the motion; these masts are continuations of the rods " by which the players are suspended." The players in the cars may move themselves by large blades. In machines rotating on a horizontal axis, the cars carrying the players are counterbalanced. The motion of these machines may be further steadied " by sails, " or balloons inflated." The traversing counterbalance weights may be used and moved by the players " to create the necessary " preponderance to induce rotation."

" Another machine performs a rotatory motion, but having its " axis inclined to the horizon." In form it is like the stem and ribs of an expanded umbrella. The cars are suspended from the points of the ribs. The suspending rod of each car is carried above its point of support, and forms a mast to carry the sail. Rotary motion is communicated by an assistant, or the players may assist themselves in the rotary motion.

" The last machine consists of a swing in which the players " stand on a disc or surface which rotates during the act of " swinging; it is furnished with a counterbalance weight carried " by a pole erected from above the supporting axis, the weight " being traversed further from or nearer to the fulcrum as " required."

[Printed, 4*d*. No Drawings.]

A.D. 1857, April 22.—Nº 1132. (* *)

KENDALL, William.—(*Provisional protection only.*)—" Im- " provements in the manufacture of boxes and similar articles, " and in the machinery or apparatus to be employed therein."

" The machine consists of an ordinary lathe-bed carrying two " fixed headstocks, in which revolves a hollow spindle fluted " inside, and carrying a fast and loose driving pulley." The wood, &c., of the desired diameter " is placed at one end inside " the hollow spindle and is carried round therewith." " The end " of the wood protrudes beyond the headstock," " according to " *the desired* height of the box, and is turned or shaped outside

" by means of suitable cutters fixed on a slide-rest worked to and " fro" by a hand lever. " The box is hollowed by means of a " chuck fitted with three different cutters, and carried in the end " of a slide." The box when " shaped and hollowed is cut off" " by means of another cutter fitted to the opposite end of the " transverse sliding rest." The wood for another box is now pushed forward " by means of a travelling headstock, which carries " a centre pin, bearing against the back end of the wood."

Toys, ribbon blocks, &c., may be manufactured in the above described machine.

[Printed, *4d.* No Drawings.]

A.D. 1857, June 4.—N° 1572.

BLUMBERG, VICTOR.—" Improvements in the manufacture of " billiard tables."

The object of this invention is the construction of the billiard table in such manner that it may be folded up. " Where legs are " made for the billiard table, they are not only made to unscrew " and put away, but they are made with screws in the centre " thereof as well, so that the table may be adjusted to a perfect " level by working the screws of the legs, no matter how uneven " the floor of the room may be. If no legs or supports are made " for the table, but that when in use it is merely placed on an " ordinary table, then feet, made to screw as the legs before " mentioned, are inserted into the corners and centre sides of the " table for the adjustment."

" In constructing billiard tables without pockets (otherwise " carambole tables)," the cushion is formed of a combination of metal wire and caoutchouc; by means of a screw at the folding joint, the cushion is caused " to yield to the traction in folding, " and to tighten up or lie parallel with the other portions of the " cushions when the table is reopened for use. Or, if preferred, " the cushion may be divided at the joint, and so arranged that " on the table being unfolded they will press against each other, " forming as firm and elastic a body as the other portions of the " cushions."

The drawings show a folding billiard table in three parts, the third part or strip being hinged between the other two with a flat hinge (the strip " forms the end as it were of the box"); to keep the table flat, a " holdfast" is employed. In another table, a slide is slidden on to certain tongues, and "when slid on to its " place forms the opposite end of the box."

[Printed, 8*d*. Drawing.]

A.D. 1857, September 22.—Nº 2455.

FORD, JOHN.—(*Provisional protection only.*)—"An improved " apparatus for marking or scoring at whist and other games, " which may be adapted for otherwise assisting the memory of " the players."

"The object of this apparatus is for marking or scoring at " whist and other games, and (where requisite and allowable) for " assisting the player to remember the suit which may happen to " be 'trumps.'

"The apparatus consists of a case or holder, in which a disc or " piece of cardboard or other suitable material, free to revolve, and " having figures marked on the front, is so fitted that it may be " readily turned or moved wholly or partially round (which may " conveniently be done by causing its edges to protrude beyond " the sides of the case), in such manner as to bring any desired " figure opposite an aperture made for the purpose in front of " the case, and thus present it to view for scoring or marking.

"Another such disc or piece, having marked on it the characteristics or signs of the four suits, may be fitted in like manner " in the case above, below, or beside the former, and may be " turned like it, so as to present one of such signs at an aperture " formed in front of the case to indicate what 'suit' is 'trumps.'"

[Printed, 4*d*. No Drawings.]

A.D. 1857, October 13.—Nº 2613.

HENRY, MICHAEL.—(*A communication from P. E. Lemercier and J. F. Bouneau.*)—(*Provisional protection only.*)—" Improvements " in apparatus for playing loto."

"The object of the invention is to render the game of loto more " diversified and amusing, which the inventors effect by introducing variety or diversity of colors (in addition to the usual " diversity of numbers) in or on the apparatus used in loto, in " such manner and for the purpose of increasing the combinations " and interest of the game.

"The apparatus proposed according to these improvements are " cards of different colors, or bearing numbers of different colors, " or on divisions, rows, or series of different colors, which are

" used with counters of corresponding colors; and also checking " boards or tables presenting a set of numbers for each particular " color. A set of knobs or balls, each bearing a number, is used " for calling the numbers from. To exemplify a mode of using " the improved apparatus in playing loto, the numbers of the " knobs or balls are called of the different colors, and only such " numbers on the cards are covered as correspond in color as well " as number, while by placing the numbers announced on the " checking boards or tables, errors are detected."

[Printed, 4*d*. No Drawings.]

A.D. 1857, October 16.—N° 2653.

BROOMAN, Richard Archibald.—(*A communication from Louis Bonneau.*)—(*Provisional protection only.*)—" An apparatus " for scoring games and points at games."

" In public establishments and others where games are played " there are certain necessary articles, such as match and cigar " holders, markers, &c., much inconvenience arises from these " articles being separate, which has suggested to the inventor the " construction of a scoring apparatus in which a cigar holder and " match holder are combined.

" This apparatus consists of a box or case with two sets of dials, " one on each side; at one end is a holder for cigars, and at the " opposite end a match holder. There are also rests for holding " lighted cigars. The dials shew five sets of figures, and there is " a separate dial for the games. The first set of figures comprises " the numbers 1 to 9; the second set the tens, 10, 20, 30, and so " on up to 90; the third the hundreds, from 100 to 400; the " fourth, 500; and the fifth, 1000. A pointer is fixed on the " same axis, opposite the dial on both sides, and for every set of " figures there is on each side a separate pointer. By turning " the pointer to indicate any particular score on one side of the " apparatus, the same score is indicated to the adversary on the " opposite side. A drawer is provided at the bottom of the " scorer for holding cards, counters, &c. The whole forms a very " useful, convenient, and portable apparatus."

[Printed, 4*d*. No Drawings.]

A.D. 1857, November 3.—N° 2789.

BOYD, James Edward.—(*Provisional protection only.*)—" Im- " provements in skates."

"The skate iron, steel plate, or blade of the skate is to be so
" formed, fitted, fixed, and arranged as to be reversible or capable
" of being shifted in a variety of ways, so that the skater may
" vary his sport from curling or fancy skating to that of ordinary
" skating, or otherwise; or should one plane of the skate irons be
" worn, as to require grinding or otherwise, the other side or sides
" can be reversed and brought into immediate action, and when
" both or all the sides are worn, they can either be ground, or
" immediately substituted by extra irons of a similar description,
" thus, not only varying the pleasure of skating, but giving the
" advantage of two pairs of skates in one."

"The straps of this improved skate are proposed to be fastened
" by means of a thumbscrew, whereby any amount of pressure
" can be obtained, an advantage which cannot be so well attained
" by the old method with the buckle straps."

[Printed, 4*d*. No Drawings.]

A.D. 1857, November 24.—N° 2935.

BORDAS, Emmanuel Octave.—(*A communication.*)—(*Provisional protection only.*)—"An improvement in billiard cues."

This invention consists "in a cork top fitted into a brass screw
" (divided into two halves) with a hollow head so as to admit of
" the cork top being removed or renewed at pleasure. This brass
" screw containing the top, fits into a brass socket (or nut) fitted
" on the end of the cue, & fixed by means of three small steel
" screws.

"The advantage gained by means of this cork over the old
" leather top is, that the elasticity of the cork gives increased
" velocity to the ball, at the same time being less expensive, of
" great durability, & always admitting of easy reparation in case
" of wear, without being compelled, as formerly, to have recourse
" to the billiard cue maker.

"A small box, contains 6 & 12, or more of them of different
" sizes (according to the dimensions of the cue) & a small screw
" driver, sharp edged at one end & pointed at the other, & fixable
" into a wooden handle."

[Printed, 4*d*. No Drawings.]

A.D. 1857, December 9.—N° 3045.

WESTENDARP, Charles, junior.—"Preparing a material as
" a substitute for ivory," called "artificial ivory."

The said material is made to imitate ivory, and similar substances, and is characterised by its cheapness and adaptability; it "may be moulded or turned to the various forms or patterns" desired.

In making white billiard balls, ivory dust and white lead or zinc white are soaked in a solution containing shellac or copal and spirits of wine. The whole is well mixed at about the boiling point of water, "the alcohol is partially or wholly evaporated, and "the stiff paste or dry powder pressed into a solid mass in a pair "of dies or moulds, which have been previously heated to about "230 to 280 degrees Farenheit; after being so solidified they are "worked round and polished like the ordinary ivory balls."

"The same purpose is effected" by reducing white shellac, white colour prepared of bismuth, lead, or zinc, and ivory dust or bone dust, into a fine powder, "and by mixing this powder in "passing it between heated metal rollers repeatedly, at about 230 "to 280 degrees Farenheit; by this process a soft homogenous "mass is obtained, which can easily be moulded into any desired "shape, and forms when cold and hard, a very ivory like "material."

"Instead of using ivory dust, steamed and finely powdered "bones, porcelain, cotton, and various finely powdered materials "may be employed, and the colours may be varied according to "the tint or shade required; the ivory or other dust may be dyed "similar to cotton cloth."

[Printed, 4*d*. No Drawings.]

1858.

A.D. 1858, January 7.—N° 27. (* *)

REILLY, JAMES, the younger.—"Improvements in chairs and "seats of various descriptions."

The chair is made in two separate parts; the upper consists of the back, arms, and seat, and has fixed underneath a plug or rod; the lower, consisting of a top surface and legs, or of top and bottom surfaces united by legs, has fixed in the middle of the top surface a cylinder in which the plug moves. Within the cylinder and around the plug is a spiral spring, "so that as often as the

" seat is pushed down it may rebound." There are handles at the sides "for the purpose of turning the chair round and assist- " ing in the jerking or other movements." By placing the cylinder on a ball or universal joint any description of oscillating movements may be obtained. More than one cylinder and plug may be used; or in their stead guides and rollers may be employed; treadles also can be attached to the rod "to give the vertical " movement." The invention is applicable to rocking-horses, &c.

[Printed, 6*d*. Drawing.]

A.D. 1858, February 12.—N° 268.

CLIFTON, JAMES.—(*A communication.*)—" A new article of " nursery furniture, or gymnastic exercising chair and support " for children."

" This article of furniture consists of a skeleton frame, the whole " or part of the frame uniting at top in the form of an arch or " otherwise. At bottom the frames are provided with castors. " There are two or more hoops for keeping the side frames apart " and extended; one is fixed to the frames at about eighteen " inches from the ground, more or less. From the upper part of " the frame there is suspended by india-rubber, or other elastic " cord, a broad padded ring, the outer edge of which just comes " within the frames, and when the elastic cords are stretched rests " upon the hoop before named as fixed about eighteen inches " from the ground. The inner edge of the ring is furnished with " a seat with holes cut in it for a child's legs to pass through and " enable the child either to touch the ground with his feet when " heavy enough to sufficiently extend the elastic cords, or the " child may keep his feet from the ground and sit in or be sup- " ported by the seat. The article is made sufficiently light to " enable a child to propel itself in walking, and the supporting " side frames are so spread out that the child cannot turn the " apparatus over, get it through doors, or sufficiently near the fire " for mischief. Various toys may be supported from the upper " part of the frame for the child to amuse itself with. The child " while sitting or standing can jump itself up and down, the " elastic cords assisting it. Instead of suspending the child's " supporting ring from above, springs may be fitted to the ring " from below, but I prefer the arrangement first described."

[*Printed, 6d.* Drawing.]

A.D. 1858, March 6.—N° 460.

CAP, Paul Antoine.—" An improved construction of billiard " tables for drawing rooms."

In a full-sized billiard table, the four parts composing the oak or other framing are attached to the legs by hooks, " which are " themselves secured into and by staples " to cross pieces, forming a solid whole. The slabs of the table are sustained by the framing as well as by cross pieces, and when hinged together " form one " uniform surface, which carries the cloth." The cushions are fixed to the framing by countersunk screws, the holes left above the screw heads being filled in with corks. To level the table, each leg has a screw at its base.

In a billiard table of small size, the rectangular framework is attached to the legs by bolts, and to the table, formed of certain parts, by means of screws. Cross pieces, with hooks and clasps, and screw plates further maintain the position of the framework. The legs may be folded in so as to occupy but little space. The parts of the table are maintained at an even height by means of cleets.

In a billiard table which may be used as an ordinary dining table, the bands or sides are furnished with projecting pieces to be inserted into parts or places furnished with screws, " which on " pressure secure the bands " " in their places." The parts which serve to fix the bands in the billiard table, in the dining table receive and secure the enlarging " pieces " or " shelves." Supporters of cast iron are placed under the legs, when the table is required for billiard purposes.

One billiard table may be used on another table, without separate legs.

The slabs are formed of several thicknesses of wood, prepared with the grain of each crossing.

[Printed, 10*d.* Drawing.]

A.D. 1858, May 12.—N° 1074.

LIÉTOUT, Alfred Léonor.—(*Provisional protection only.*)— " Improved portable medical and hygienic gymnastic apparatus."

This invention " relates to a portable gymnical apparatus which " can be used in drawing rooms, parks, or other places. This " apparatus consists of a foundation bed or frame, on which four " uprights or standards are placed, these four uprights serve " as a support for all the ordinary parts used for gymnastic pur-

" poses, comprising a ladder placed at the side, an arm chair for " straightening the body, a pulley or tackle for raising weights, " a rope ladder, with knots, rounds, blocks, &c., a horizontal bar, " a swing bar, a horse, &c.

"The whole apparatus is arranged so as to be capable of disconnecting, folding up, and placing in a case. In order to mount " it, it is merely necessary to join the pieces and place it on a level " surface."

[Printed, 4*d*. No Drawings.]

A.D. 1858, May 31.—N° 1221.

GIRERD, JEAN BAPTISTE, and WOHLGEMUTH, PAUL FREDERICK.—(*Provisional protection only.*)—" Improvements " in ornamental staining, dyeing, fixing designs, writing, letter " press & type printing, and cyphering, and colours on wood, " or any other substances, also extracting, transferring, or discharging colours from the same."

The improvements consist in decorating the above-mentioned substances "& fixing thereon an imperishable stain by the " agency of metallic salts and oxides."

Various designs are placed on the said substances, so as to act " by the instrumentality of light & shade on the surface," and so as " to preserve uniformly the original ground " forming the said designs from the influence of light, at the same time modifying any colours that may be placed thereon; the result is applicable to decorations on billiard and bagatelle boards and cues; also to household furniture and to other manufactured articles. The general appearance of the said result may be improved by varnishing or French polishing; "but when the " drawings obtained upon wood are required to be transferred " or applied on any other material, we, previous to fixing, obtain, " by common pressure, the transfer of the design, & then " submit the reproduction to mercurial fumes, sulphurated " [sulphuretted?] " hydrogen, or pass it through a solution of " chloride of lime or any other metallic salts acting as a developping agent to the colours sought to be reproduced."

[Printed, 4*d*. No Drawings.]

A.D. 1858, August 30.—N° 1960.

DAVIES, GEORGE.—(*A communication.*)—" Improvements in " billiard tables and cues."

The annular frame of this table is supported on three legs. The slate top of the table rests upon three pulleys that are adjustable in vertical grooves in the inner part of the frame. The baize covering the slate is "held down and distended by means " of an inner frame to which the cushions of vulcanized india- " rubber (also covered with cloth) are attached. To the centre " of the table underneath is fixed a rod or pin, which slides in " a hole formed in a transverse piece attached to the annular " frame. This rod or pin serves to centre the table, and to " maintain it in its position on the pulleys or wheels before " named. To adjust this table it is merely necessary to raise or " lower the several wheels by means of their screws."

When the above-described table is not required for billiards, "it " is to be enclosed by a cover having one side covered with a cloth, " so as to form a card table, and the other side with mahogany, " for ordinary purposes; and in the annular frame or below it " are drawers for holding cues, balls, cards, or other articles."

"The improvement in billiard cues consists in making them of " a rod sliding in a tube, and projected forwards by a spiral" [helical?] "or other spring. The rod is forced inwards com- " pressing the spring, and is held by a catch. The cue being " placed and held firm opposite the ball, the catch is released " by the finger, and the rod being projected forwards by the " spring, strikes the ball."

With a billiard table and cue of this construction the players may remain seated.

[Printed, 8*d*. Drawing.]

A.D. 1858, September 11.—N° 2060.

JOURNET, Pierre.—(*Provisional protection only.*)—"An im- " proved toy."

"This improved toy, or plaything, consists of an entirely closed " up semicircular flat box, at each of the upper flat square or " diametrical side exists a hole provided with a corresponding " trap door, which a spring or strip of india-rubber tends to " keep shut. A small cross bar is provided at each end with a " pin or pivot inserted in the two opposite flat or semicircular " sides of the box towards the centre; from this bar is hanging " by means of a wire fixed thereto, an arc, or semicircular, or " curved plate, or strong wire, provided towards the middle of

" its length with a counterweight, where, as at each end of this " arc, is fixed a grotesque figure or other ornament, so that by the " effect of the see-saw or swinging motion that may be imparted " to the arc, the said figures will alternately strike against the " above-mentioned doors, and thus opening them, alternately " present themselves to sight. The semicircular form of the " box allows of giving it a see-saw motion on its curved side, " which motion is transmitted to the arc and grotesque figures."

[Printed, 4*d*. No Drawings.]

A.D. 1858, September 25.—N° 2155.

FARNCOMB, Edward.—(*Provisional protection only.*)—" Im- " provements in lilliputian fire-arms."

" The barrels are screwed to the stocks from below by a screw, " which at the same time fastens the head of the false trigger- " guard." " The trigger-guard covers the lower part of the " notch to which the spring is fastened." The spring is spiral and lies in a cavity in the stock; it is not fastened behind, but a wire prevents the coil from coming out of its cavity.

The lock is formed by a roller passing entirely through the " stock at the breech, and having a tail piece passed through the " centre and notched at the end to receive the spring, the said " notched end appearing outside in the form of a trigger."

" To the roller on the right side the hammer is affixed; the " real trigger is a needle inserted in the stock behind the ham- " mer; this needle or trigger acts also as a retaining spring or " catch, to set the hammer on full cock, by drawing which needle " or trigger back, the hammer is disengaged, and falls down into " the pan with the full force of the spiral spring.

" The pan is intended to receive the percussion priming, and " has a hole communicating with the touch-hole for pricking. " The gun is loaded with a small quantity of powder and shot or " ball, and is fired by the head of a vesta match instead of the " ordinary percussion cap; the toy may be made in the form of " a fowling piece, carbine, pistol, or other fire-arm."

[Printed, 4*d*. No Drawings.]

A.D. 1858, October 13.—N° 2283.

BENDA, Anton.—(*A communication.*)—" Improvements in the " manufacture of models of the human and other figures, to be " *used as toys, for* tuition, and for other purposes."

This invention consists in constructing models of the said figures "by forming the limbs and other parts of the same separately, and combining them by means of india-rubber or other " elastic strings or cords," preferably placed "in the interior of " the figures." In a modification of the invention, the parts of the said figures may be united by means of wire or catgut.

The drawings represent figures in which the limbs and body are formed in separate pieces, and holes are pierced " through the " upper parts of the limbs and body." "The limbs are secured " to the body and held together by india-rubber or other elastic " cords, passed through the holes therein, and secured by knots, " cement, by a wedge, or other suitable means. The elasticity " of the cord allows of the limbs being turned and placed in a " variety of positions, while the fastening afforded by the cord " is sufficiently strong to cause the position in which the limbs " are placed to be retained." The head may be attached to the trunk "by an elastic cord, which allows of the head as well as the " limbs being moved." In models of animals, the tail may be secured to the body by an elastic cord. The parts of the limbs may be united "to each other by elastic cords, in a manner " similar to that before described, to allow of every joint being " bent into various positions, in order to obtain a correct model " or representation of the figure to be represented."

[Printed, 6*d*. Drawing.]

A.D. 1858, October 14.—N° 2288.

COWPER, CHARLES.—(*A communication from Gustavus Cuppers.*)—" Improvements in the manufacture of articles of hard " vulcanized india-rubber and gutta percha and similar gums."

This process consists of partially hardening and repairing or perfecting the above articles one or more times, and then completing the hardening or vulcanizing process by placing the article loosely in a box which is hermetically closed and exposed to heat until the articles are completely hardened.

In the first part of the process " the india-rubber or gutta " percha is prepared for hardening in the usual manner, and is " placed in the mould made of cast tin, or cast brass, or pressed " tin, or other suitable material. It is then subjected to the " action of steam or hot air, or heat of any kind during a period " of from one half an hour to three hours." Having been removed from the mould, any imperfections on the surface of the india-rubber or gutta percha are moistened by a solution of india-rubber or gutta percha, "and are filled and smoothed with the " original compound," and again pressed into the mould, " care " being taken to have the joints of the mould water-tight during " the heating process." The parts of the mould are then pressed firmly together, "and the whole is again replaced in the heat." This moistening, filling up, and heating process is repeated until the shape of the article is perfect.

Amongst other articles, this process is fitted for "balls, clubs, " and so forth."

[Printed, 4*d*. No Drawings.]

A.D. 1858, October 23.—N° 2369.

BODMER, Rudolph. — (*A communication from Charles Thévenot.*)—" An improved toy or plaything for children."

" This invention relates to a certain improved mechanical toy " or plaything whereby puppets are made to move about or to " dance; and it consists in the puppets being supported by or " suspended from three or any convenient number of lengths of " white horsehair or bristle, each somewhat exceeding the length " of the moveable legs of the puppet, and placed on an elastic " surface or platform to which a vibrating movement is imparted " by a simple mechanism, put into action by hand or by clock-" work. The puppets are thus easily set in motion, and made " to describe various curves and steps in imitation of the walz " [waltz ?] " or polka."

In one arrangement, a cylinder or drum of wood with a wooden bottom, at its upper end or head has a sheet of caoutchouc stretched over it, "upon which again is spread a piece of glazed " paper." Inside the drum and close to the crown, pieces of gut are stretched, from the circumference to the centre, the central ends being attached to a wooden disc, and the outer ends to the drum. Cork washers on the threads and a cork plug on the disc touch the elastic surface. An axis, furnished with a handle, extends from the circumference of the drum towards its centre and carries certain quill ends, which at intervals during their rotation touch the under part of the disc and put the elastic surface in vibration.

Clockwork may be the motive power instead of the handle.

In another instance a lever, with a click at one end and an adjustable knob at the other, takes the place of the gut and the cork washers.

[Printed, 10*d*. Drawing.]

A.D. 1858, November 3.—N° 2453.

BLUMBERG, Victor.—" Improvements in the construction of " slate billiard tables, which improvements are also applicable for " other useful purposes."

The object of this invention is to coat or veneer wood with slate or stone.

This invention is applied "to billiard tables, making the playing " surface in a single or two or more parts, each part being " veneered or coated with thin pieces of slate, veneered on wood." The invention may also be used for flooring, for slabs, &c., for use in chemical works, for larders, store rooms, vats, cisterns, &c.

The foundation slabs of wood are constructed by glueing together planks of very dry wood, placing the grain of the wood " in contrary directions." These glued planks are subjected to a process of pressure, and when the glue has sufficiently dried, the prepared boards are cut " into long laths." These laths are then glued together and cut to an angle of 45°, or to any other shape that may be required; the slabs or squares of wood are then glued together so as to cross each other. Slate is then veneered on these slabs, the adhesion to the surface being produced by any of the usual adhesive substances. Felt, saturated with adhesive matter, may be placed on the surface of the wood before placing the veneers. The veneers are then pressed and left until the cohesion is complete. The slate surface may be ground smooth as plate glass is ground.

Other details are set forth as being desirable for adapting this invention to other useful purposes.

[Printed, 10*d*. Drawing.]

A.D. 1858, November 13.—N° 2552.

LIVERMORE, Isaac.—" An improvement in the manufacture " of shuttlecocks."

"In order to render shuttlecocks more suitable to be used with " solid bats," " india-rubber, and by preference vulcanized india- " rubber, is applied to the under surface of a shuttlecock in which

" the feathers are stuck." A disc of gutta percha is, by preference, used " on the upper surface of a shuttlecock, into which " the feathers or wings are stuck."

" In making a shuttlecock according to my invention, the body " into which the feathers or wings are struck may be all of india-" rubber, either hollow or solid, moulded, or shaped into the form " desired; but it is desirable that the upper surface into which the " ends of the feathers are stuck should be of a somewhat harder " material, and therefore I apply a disc of gutta percha or of " cork, or of leather, or of paper, or of any suitable material to " give to the upper surface of the body of a shuttlecock a greater " degree of hardness than the lower end or part that is struck by " the bat, which I prefer to be as elastic as possible."

" When using a disc or covering on the upper surface of the " body of a shuttlecock of india-rubber, it is desirable to dip the " ends of the feathers or wings in india-rubber cement, or other " suitable cement, before inserting them into the holes which are " formed through the upper surface to receive them, and such " cement may also be used when inserting the ends into the " body of a shuttlecock made wholly of india-rubber."

[Printed, 4*d*. No Drawings.]

A.D. 1858, November 20.—N° 2639.

BROOMAN, **Richard Archibald**.—(*A communication from A. F. E. Robert.*)—(*Provisional protection only.*)—" Improvements " in the manufacture of dolls, statuettes, figures of animals and " others, and toys."

" This invention consists in forming dolls and other figures in " vulcanized caoutchouc, as follows:—A metal mould of the object " or figure to be formed, say, for instance, a doll, is suitably " prepared, a hermetically-closed ball or sac of caouchouc of size " and thickness proportioned to the size of the intended doll is " placed in the mould, and the parts thereof locked. Thus " prepared, the mould is plunged in the hot vulcanizing com-" position. During this operation the air inside the caoutchouc " ball is expanded by the heat and forces the caoutchouc against " and into the sides of the mould and makes it assume the " interior shape and form thereof, which form it will preserve " after being removed from the mould."

" Another kind of doll or figure is formed by shaping the head, " *arms*, and upper part of the body in one mould, and the lower

" part of the body and legs in another mould; and by inserting
" articulated, wooden, or metal limbs, with the joints placed
" so as to allow the figure to bend at the knees, elbows,
" and other parts, answering to those of the figure imitated.
" After having introduced the jointed wooden limbs, the two parts
" of the body are united, and the division between them masked
" or covered by a belt or otherwise."

[Printed, 4*d*. No Drawings.]

A.D. 1858, November 24.—N° 2667. (* *)

HESS, Richard Henry.—Manufacturing certain articles, among which billiard balls are mentioned, from certain silicates of magnesia, "such as talc, steatite, &c." These substances are reduced to a state of powder and then pressed into suitable moulds, colouring matter being added when required. "Other
" substances may also be added to the silicates, such as kaolin,
" alumina, lime, carbonate of barytes and felspar, at the option
" of the manufacturer." After being formed in the mould the article is removed therefrom and baked or fired. The addition of a small proportion of glass to the material before pressing it into the mould "assists the fusing operation."

[Printed, 4*d*. No Drawings.]

1859.

A.D. 1859, January 18.—N° 157.

JOHNSON, John Henry.—(*A communication from Jacques Louis Lemaire Daimè.*)—(*Provisional protection only.*)—"Improve-
" ments in air pistols and guns."

"According to this invention it is proposed to make the breech
" piece of these toys moveable, so as to be readily taken off and
" reapplied to the arm when the withdrawal of the air piston and
" rod is required for repairs. The breech may be secured in its
" place by suitable pins, by a screw thread, or by spring catches.
" The front end of the piston rod is screwed for the purpose of
" receiving a fixed metal shoulder or abutting piece, against
" which the body or packing of the piston, which may be of cork,
" india-rubber, leather, or other suitable material, is screwed and

" more or less expanded by the aid of a nut screwed finally on
" to the end of the piston rod.

" In the case of pistols, the piston rod is also screwed into the
" butt, and the butt itself is made hollow and fitted with a lid or
" cover to contain a reserve of charges or other details. By the
" application of screw threads to the piston rods and the use of
" moveable breech pieces, it is obvious that these parts may be
" more readily removed and repaired when deranged.

" It is also proposed to make toy pistols in the form of revolvers
" by applying a metal covering at the breech, fitted concentrically
" or otherwise thereto, and corresponding in external shape to
" the revolving chamber of pistols of this class.

"These improvements are applicable of course to small toy
" cannon mounted on their gun carriages, to carbines, and to
" muskets."

[Printed, 4*d*. No Drawings.]

A.D. 1859, March 9.—N° 618.

NEWTON, William Edward.—(*A communication from Abraham Bassford.*)—" Improvements in billiard tables."

1st. " Supporting the rail by means of rhomb-shaped studs,
" which leave room enough in their centre for bolts to pass through,
" while they are bevilled down towards both ends, so that an
" open space is left between the bed and the rail nearly all the
" way round, so that a ball can be reached with a cue just as
" easily when it lies close up to the cushion as it is to play on it
" when it lies further from the rail."

2nd. " Forming the pocket bows of the same pieces which
" form the rail, joining the same in the middle of the bows, and
" giving them a bevil underneath, so as to throw the balls down
" when played at the pockets, and yet keeping the pocket bow on
" a line with the top of the rail."

3rd. " A particular construction of the cushion, the object of
" which is to give a perfectly true angle." An ivory cushion would effect this desideratum, but it would injure the balls, and balls impinging upon it at a very obtuse angle " would slide on
" the edge." " The softer the cushion " " the more influence it
" has on the angle of reflection," " accordingly the improved
" cushion is constructed of a metallic plate, the edge of which is
" covered with a thin strip of india-rubber or other soft but

" elastic substance of the proper thickness, in order to give " perfectly true angles from any force of propulsion imparted to " the ball, and also to prevent the balls from becoming injured " by coming in contact with the metal plate, but not so thick as " to cause a false reflection of the ball when played at the " cushion."

The drawings represent these improvements and comprise " a diagram showing the influence upon the direction of a ball " of the old or common cushion, and of that cushion which " constitutes a portion of these improvements."

[Printed, 8*d*. Drawing.]

A.D. 1859, April 1.—N° 818.

NEWTON, William Edward.—(*A communication from Michael Doherty.*)—" Improvements in cricket bats."

The object of this invention " is to construct a cricket bat that " will not when in use be indented or bruised by the ball, and " will not sting or jar the hand in striking the ball as is the case " with the common bat. The improved bat also while being " lighter will send a ball a greater distance than the common " bat."

" The invention consists in constructing the blade of the bat " with a mere shell of wood and a filling of cork or other suitable " elastic material, and in constructing the handle of a hollow " tube of wood with a strip of whalebone or other flexible or " elastic material running through the centre and down into the " blade."

The blade and handle are made separate. The blade, " whether " made of one piece or of two or more separate pieces, is divided " longitudinally in a plane as near as possible parallel, with its " face " " and each half is hollowed out to receive the filling." The handle " whether made of a single piece or of two or more " separate pieces is divided longitudinally in a plane at right " angles to the face of the blade, and is hollowed out in the form " of a tube," " and between the two parts there is inserted a flat " strip of whalebone," " which is made long enough to extend " some distance down into the blade." " The wooden part of " the handle on each side of the strip " " is also tapered and " fitted into an opening provided for it in the blade." " The " several parts of the bat made and fitted together, as above " described, are united by glueing."

Printed, 6*d*. Drawing.]

A.D. 1859, April 14.—N° 944.

HIGHAM, Lindley John.—(*Provisional protection only.*)—“ Improvements in billiard tables.”

This invention “relates to a novel mode of constructing the “ cushions so that the ball when close against the cushion may “ be more easily struck by the player than on tables with the “ ordinary cushions. To effect this object the cushion is made “ much lower than heretofore, so that at least one-third of the “ ball will be above the level of the cushion rail.”

“Another improvement consists in making the angles of the “ cushion at the pockets more acute than heretofore.” By this construction “the opening is narrowed, but the facility of pocketing the ball is not diminished, while at the same time the “ playing cushion surface is increased by several inches.

“Another improvement consists in inserting flat steel, whalebone, or other springs in the body of the cushion, for the “ purpose of increasing the resistance of the cushion without “ damaging its elasticity.

“In carrying out this improvement the cushions are by “ preference made solid, of vulcanized india-rubber or gutta “ percha, and the metal, whalebone, or other spring is embedded “ therein at an acute angle to the surface of the table.”

“ The object of this improvement is to prevent the balls from “ bedding in the cushion, and taking false angles, or bouncing or “ hopping off the table.”

[Printed, 4*d*. No Drawings.]

A.D. 1859, August 5.—N° 1809.

NEWTON, William Edward. — (*A communication from Jonathan H. Green.*)— (*Provisional protection only.*)—“ An improvement in billiard and bagatelle cues.”

This invention “relates to an improvement in the tip of the “ cue, and consists in the employment for this purpose of a compound composed of gutta percha or india-rubber, vulcanized “ or not vulcanized, with pulverized or comminuted chalk, or “ siliceous or calcareous substance or glass, to which may be “ added or not, as may be desired, oxide of zinc or of lead, or “ other metallic substance; the proportions which have been “ found best in practice are about three parts of the chalk or “ other substance to one part of gutta percha or india-rubber. “ *This compound* must be well mixed and rolled out to a suitable

" thickness, and the tips or points are formed therefrom, and " when prepared as above described, such tips are to be attached " by means of glue to a ferule, which may be screwed on to the " end of the cue, or the prepared tip may be glued to the end of " the cue.

" These tips are more durable than those made of leather, and " they do not require to be chalked, as is now the case."

[Printed, 4*d*. No Drawings.]

A.D. 1859, August 12.—N° 1865.

PHILP, James.—(*Provisional protection only.*)—" An improved " hobby-horse or child's exerciser."

This invention " consists in constructing in wood, iron, or other " like suitable material, a carriage or body capable of containing " a child or children, with a curved or rocking bottom, and terminating in front in an ornament or 'figure head' in the shape " of a head and neck of a horse or other animal."

[Printed, 4*d*. No Drawings.]

A.D. 1859, August 15.—N° 1881. (* *)

KISKY, Charles, and JONES, William.—(*Provisional protection only.*)—" Improvements in the construction of sideboards."

This sideboard " admits of being readily converted into a bagatelle board," and " is also fitted in the division set apart for " the cellaret with a means for facilitating access to the decanters " or bottles contained therein." The frame, which is supported by the pedestals, is made (instead of with drawers) " with a sliding bagatelle board, which is covered over and shut in by a " hinged cover forming the top of the sideboard." By raising the cover the bagatelle board is exposed, and it may then " be " drawn out laterally in the parallell guides which support it " sufficiently far to prevent the player from being incommoded " by the proximity of the wall against which the sideboard may " stand." The drawers, whose place is occupied by the bagatelle board, " may be arranged, if required, under the board in the " open space between the pedestals."

[Printed, 4*d*. No Drawings.]

A.D. 1859, September 24.—N° 2171.

POPE, Joseph Tunnicliff.—(*Provisional protection only.*)— " Improvements in the manufacture of marbles."

"For this purpose I mould the clay from which the marbles are " to be made to a cylindrical form, by pressing it through a " suitable die; the clay thus moulded is cut into lengths, and " these are, by means of two grooved surfaces working together, " divided into pieces, each of the size to form a marble, and by " the motion of one of the surfaces on the other, the pieces of " clay are rolled along in the grooves, and are brought to a " globular form. The apparatus which I employ is arranged in " the following manner :—It consists of a drum having a number " of semicircular grooves formed on its periphery; this drum is " mounted on an axis, and is caused to revolve continuously; it " is enclosed in a case grooved interiorly in the same manner as " the surface of the drum. At the top of the case is a slit, " through which the lengths of clay moulded to a cylindrical " form, as above mentioned, are fed into the machine, and they " fall on to the surfaces of the grooved drum, and as this revolves " they are carried round into the space between the drum and " the interior of the case, which space at the top is sufficiently " wide to allow the cylinders of clay to enter freely, but in passing " round the drum it becomes continuously narrower, until " the ridges on the drum come in contact with the ridges on the " interior of the case. The clay being carried round by the drum " is thus divided into a number of pieces, each of suitable size, " and these pieces are rolled in the grooves until they are brought " to the form desired, they are then discharged through a slit at " the bottom of the case, and dried and burnt in the ordinary " manner."

[Printed, 4*d*. No Drawings.]

A.D. 1859, December 28.—N° 2962. (* *)

ROSTAING, Charles Sylvester.—"Improvements in com" bining and mixing gutta percha with mineral and vegetable " substances capable of altering its quality in such a manner as " to produce hard, resistent, unalterable, and imputrescible com" pounds diversly colored." These compounds are applicable, amongst other purposes, to replace wood and other substances used in the manufacture of skates, and to make chessmen, dolls' heads, &c.

The colours used in this invention are obtained by baking in a muffle or crucible a suitable metallic oxide mixed with water or a mineral acid. The baked oxide after cooling is reduced to impalpable powder and then dried and sieved.

The preparation of the various compositions is divided "into " eight different operations," as follows :—

1st. The partial purification of the gutta percha by boiling it in soft water, flatting it, and again boiling it "in a decoction of " 'radix saponaria alba' or soap wort."

2nd. The complete purification of the gutta percha by boiling it in a caustic lye and flatting it.

3rd. The preparation of "artificial silicate of zinc."

4th. The preparation of "silicate of alumina and of zinc."

5th. The preparation of talc "rose colored by oxyde of cobalt."

6th. The preparation of a combination of zinc blende "with " kaolin or with felspar."

7th. The preparation of a combination "of tannin, gutta percha, " chloroform, benzoin, balsam of tolu, or essential oil."

8th. The preparation of a combination of gutta percha with catechu, to which camphine or benzin may be added.

The drawings show a machine for mixing the above-mentioned compositions, consisting of a vessel heated by a steam jacket and having suitable rollers and scrapers.

[Printed, 1*s*. 4*d*. Drawings.]

A.D. 1859, December 31.—N° 2997.

MUNSTER, Henry.—"Certain improvements in billiard and " other tables."

1st. "The construction of the cushions" of the said tables.

2nd. Enabling the player to use his cue nearly in a horizontal position.

The lower part of the face of the india-rubber cushion is " nearly or quite vertical for about half its height," and is " solid through to the back (which may simply adhere to a bar " of wood or metal, or both, or clipped between projecting ledges " above and below)," and the upper part of the face of the cushion is "inclined forward at an angle or bevil, so that the " impinging ball shall strike both the lower portion of the face " at its centre, the upper above it; but the upper portion of the " face is to be constructed with a hollow at some slight distance " from the face and top." This hollow "will assume the form " (nearly) of a right-angled triangle at its ends. It will allow

" the upper part of the face when struck, to be pressed back, " and yield far readier than the lower, so that the more violently " a ball impinges, the more the face of the reacting cushion will " approximate to being vertical." "A moveable rest for the " hand may be fixed or hooked, as wanted, to the outside of the " cushion.

"The bar to which the rubber is fixed may rest on upwrights, " which may themselves slide up and down (adjusted by screws) " in vertical holes in that part of the cushion which is fastened " to the bed, or be fixed to it, and then such lower part may " itself be raised or lowered by the screws which fix it to the bed, " running not through holes but through perpendicular cuts or " slots."

[Printed, 4*d*. No Drawings.]

1860.

A.D. 1860, January 6.—N° 45.

VIVIAN, ROGER.—(*Provisional protection only.*)—" Improve- " ments in constructing balls for cricket and other games, which " invention is applicable to spherical valves."

"I construct balls for cricket and other games, which shall not " be liable to deterioration from exposure to wet weather, and " may be made cheaper than the ordinary balls are, and be " rendered more or less elastic according to the degree of elas- " ticity which may be deemed desirable, and also more or less " heavy as required. To this end I form a sphere of wood, glass, " or other suitable substance of the like hardness, and power of " maintaining its integrity at the great degree of heat which it " will be required to apply. Having this sphere (if of wood, I " proceed to desiccate it (unless the sphere be formed of wood " first desiccated) and render it dry, free from moisture and " gases, (and if the sphere was first formed, and then desiccated, " I again 'turn it,' so as to ensure its having the proper form), " which being done), I coat or cover the sphere with india- " rubber or gutta percha, gutta percha compounds, or vulca- " nized india-rubber or its compounds in the hot state, and when " dry or cold, the ball is ready for use. For spherical valves I " should prefer to have the inner sphere of brass. It may be

" desirable to make a groove or grooves in the inner sphere and " bind string or wire around it; and this inner sphere may, if " required, be varnished previous to receiving its outer coating."

[Printed, 4*d*. No Drawings.]

A.D. 1860, January 31.—N° 251.

OWEN, George.—" Improvements in rocking-horses, see-saws, " and other analogous vibrating or oscillating contrivances."

1st. "The substitution for rockers as heretofore used in the " construction of rocking horses, see-saws, &c., of an upright " bar or lever made of iron, wood, or other suitable material, to " the top of which the seat or seats or the horse body is securely " fixed in any convenient manner. The bottom of this upright " bar or lever is hinged or otherwise fixed to the floor, or to " a base board, or to an iron work forming a base in such a " manner that the bar or lever and the seat or horse body may " oscillate freely in a vertical plane."

2nd. "The application of elastic springs of vulcanized india-" rubber, or of metal or other suitable material attached to the " body of the rocking horse, the ends of the see-saw, &c., &c., in " such manner as may be most convenient, so that the horse " body or see-saw, &c., may be maintained by them in equipoise " when not in use. When in use the rocking or oscillating " motion may be given by the rider himself, or by an assistant, " the springs always tending to restore the horse or see-saw with " the rider or riders to the state of equipoise. To prevent undue " strain upon the springs through violent usage I employ check " straps which effectually govern the vibration or oscillation, " confining it within proper limits. The upright bar or lever " may consist of a spring of steel or other suitable material, in " which case other springs will be needless, but it must be firmly " secured, not hinged, to the floor or base board, &c., as well as " to the seat or horse body."

[Printed, 4*d*. No Drawings.]

A.D. 1860, March 1.—N° 571.

MILNES, John.—" An apparatus for exercising the joints and " muscles of the human body."

This "apparatus is intended for the purpose of affording a " simple and ready means for bringing into exercise and develop-

" ment the joints and muscles of the human body. The base " of the said apparatus consists of a rectangular frame, to the " opposite sides of which are fitted two posts or standards con- " nected overhead by a rail or cross bar. A footboard or platform " is suspended from the corners of the rectangular frame (clear " of its sides) by means of springs of steel or vulcanized india- " rubber, and a pair of springs terminating in handles are sus- " pended overhead from the rail or cross bar before mentioned. " The framing of the apparatus may be constructed in either wood " or metal, and in different sizes, suitable for use by children and " adults."

"In order to make the apparatus portable, the standards are " each made in two lengths, and connected together by sockets," " and to enable the shifting of the standards extra straps," " fitted on opposite sides of the frame, are provided. Those " useing my said apparatus stand on the platform," " and while " holding by the handles " " give sufficient motion to their bodies " to set in action the springs."

[Printed, 6*d*. Drawing.]

A.D. 1860, April 16.—N° 953.

CARPENTIER, Jean Baptiste Auguste.—" A new metrical " apparatus with table."

"The present invention consists of a box containing a collec- " tion of models by means of which the weights and measures " of any country can be practically taught. It consists of a " receptacle of wood or other material, according to fancy, having " a lid opening so as to form a table on which the different " objects may be placed when required for illustrating."

The measures of length, surface, and solidity are illustrated by various models and instruments, amongst which are the following:—A sphere, with equator, meridians, and other divisions. Foot and yard measures. T-square, level, plumb line, set square, compasses, and chain. Cubes, prisms, pyramids, cylinders, and cones.

The measures of capacity are illustrated by:—A solid cubic foot. Measures for liquids. Measures for dry matters.

The measures of weight are illustrated by:—A solid and a hollow cube. A series of weights. A set of scales.

The money table is illustrated by "the pieces of coin now " *current*."

"Various objects."—"A thermometer divided after Fahrenheit, "Réaumur, and Centigrade." "A mariner's compass with "rhomb line." "A clock dial used in illustrating the time, and "a compass card showing the use of the mariner's compass." "An alcoometer for illustrating the weight of liquids."

[Printed, 6*d*. Drawing.]

A.D. 1860, May 22.—N° 1260. (* *)

SHAW, WILLIAM THOMAS.—"Improvements in thaumatropes "or phenakistoscopes."

This invention "consists in the application of the principle of "the stereoscope" to instruments "which depend for their "results on 'persistence of vision.'"

"The thaumatrope and the phenakistoscope, as is well known, "give to objects shown by them an appearance of motion; by "my improvements I cause these objects to appear also in solid "relief, as when seen in the ordinary stereoscope. I take from a "suitable object a number of photographic pictures, the pictures "being taken in pairs having a stereoscopic relation the one to "the other as is well understood. Between the taking of each "pair of pictures the object is caused to perform a portion of the "movement which it is desired to represent, the first pair of "pictures being taken at the commencing point of the move- "ment, and each successive pair showing the same somewhat "further progressed than the previous pair, until the last pair "shows the object at a point just before it regains its first posi- "tion. Having obtained these pictures, I view them by means "of a stereoscope, and by mechanism I cause the pairs of pictures "to be changed rapidly, each pair being submitted to the eyes "in succession for a moment of time. When thus seen, an "appearance is obtained as of a solid body in motion."

An apparatus "on the principle of the reflecting stereoscope" has (besides the synchronously revolving "picture" discs) revolving eye discs, which limit the time during which the pictures can be seen. In a refracting instrument, a revolving octagonal drum carries the pictures, and a revolving slotted drum limits the time of sight of the pictures, as well as the sight of each eye to the picture which is intended for it.

[Printed, 1*s*. 4*d*. Drawings.]

A.D. 1860, June 18.—N° 1478.

NICHOLSON, HAMLET.—" A new and improved cricket and " playing ball."

" In manufacturing cricket and playing balls according to my " invention, firstly, I employ for the inner body of the ball, " cotton, either cleaned or uncleaned, hemp, wool, or other " fibrous or filamentous substance, closely compressed, and containing (or without) a central substance or core composed of " cobler's wax, gutta percha, or any adhesive substance, or of " wood or other hard light substance covered or coated with glue, " cobler's wax, or other adhesive matter.

" Secondly, I bind the said inner body together with cotton or " other threads or twine, so as to cause it to retain its proper " form until the application of the outer covering or case.

" Thirdly, I employ gutta percha (either by itself or blended " or mixed with a similar material) for the outer covering or case, " applied in a warm and plastic state, so as to adhere together and " to the said inner body, and while in a soft state I place the " same in a mould of the required size and form (previously oiled " or otherwise prepared, to prevent adhesion), and apply pressure " thereto in order to give to the ball its true form and sufficient " solidity.

" In some cases where it is thought desirable that the outer " cover of the ball should be of leather, I proceed to make the " compound ball in the same manner as above described, excepting that I make the ball the thickness of the leather smaller, " and then cover the ball with leather in the ordinary way."

[Printed, 4*d*. No Drawings.]

A.D. 1860, July 9.—N° 1654. (* *)

PRITCHARD, WILLIAM HARPER.—" An improved apparatus " for amusing and exercising children, and assisting them in " learning to walk."

The frame consists of eight metal legs supporting a tube; an inner tube, " free to rise and fall without revolving," serves as a bearing for a spindle which revolves only in one direction, a ratchet on the top of the inner tube and a click preventing its revolution in a contrary direction. The spindle carries a horizontal bar having at one end a padded ring and at the other an adjustable balance weight. The inner tube is raised or lowered by a screw which passes through a nut in the bottom of the outer tube. The ring is jointed and secured from opening by a sliding loop and spring. At one end of the bar a chair may be placed "fitted upon a central pin," whereon "it "may be turned half round;" or a chair may be placed at each end. In this arrangement the spindle revolves in either direction, and attached to it are two bands passing over pulleys on brackets fixed to the inner tube. The bands are wound round the spindle in contrary directions, consequently the descent of a weight hooked to the end of one winds up the other, and causes the spindle to revolve, and with it the chair.

[Printed, 10*d.* Drawing.]

A.D. 1860, August 2.—Nº 1866.

HAAS, Albert Frederick.—(*A communication from Fischer Naumann and Company.*)—"Improvements in dolls."

"Dolls hitherto made have never been so constructed as to "allow of their being placed in a sitting posture with the legs "bending at and hanging down from the knee. Now this "invention consists in constructing dolls with an enlarged part "at the bottom of the body, and in connecting the upper part of "the legs to the fore part of the body in such manner as to allow "of the body being placed and remaining erect when put in a "sitting posture. There is also a joint at the knee, which allows "of the doll being seated, say upon a chair, with the feet and "legs from the knee downwards in the position of a living "person."

[Printed, 6*d.* Drawing.]

A.D. 1860, September 15.—N 2249. (* *)

BARNWELL, Stephen, and ROLLASON, Alexander.—"Improvements in combining and mixing certain solutions of "pyroxylene with animal, mineral, and vegetable substances, by "which its quality is altered in such manner as to produce hard, "resistent, adhesive, plastic, or resilient compounds and articles "unalterable in their nature and varied in colour, which said "compounds in a state of solution may also be advantageously "employed as paints or varnish."

The pyroxylene is made in preference by steeping common rags in nitro-sulphuric acid. The acid used on a former occasion made up to its original stregth by a little stronger acid is employed. The compound solutions or pastes of pyroxylene with other ingredients are formed according to their special requirements. The following are a list of ingredients. "Oils:—essential, " animal, vegetable, or mineral. Gums:—resins, balsams, tar, " pitch, bitumen, cements, wax, tallow, and grease, india-rubber, " and gutta-percha, ivory and bone dust; powdered bark, fari- " naceous and amylaceous substances, starch and dextrine. " Vegetable or mineral pigments and bronzes may be introduced " as colouring agents, care being taken that everything employed " in the compound be free from water; the solution of pyroxylene " will, from its adhesive nature, combine freely with almost any " foreign matter, and the compounds thus formed may be " rendered available for a great variety of purposes," among which toys are mentioned.

[Printed, 6*d*. No Drawings.]

A.D. 1860, September 21.—N° 2301.

ROGERS, CALVIN B.—(*A communication from Reuben Shaler.*) —" An improved floor skate."

" In the place of the ordinary runners" this skate "is provided " with rollers, the operating surfaces at the periphery of which is " made elastic, by which they are made to take a better hold " upon the floor or carpet." "The body of the skate is made in " the usual manner. The side pieces in which the rolls are fixed " are united where they connect with the wood or metallic body " of skate, and form a hanger; this hanger is united to the body " of skate with screws, or otherwise, as may be convenient, care " being taken to secure it firmly. The main bodies of the rollers, " which are made of iron, brass, wood, or any other suitable " material; steel may, perhaps, on some accounts, be better than " than anything else. The body of each roller has a groove " turned in the periphery to receive the india-rubber ring, which " is sprung on." "The rollers are secured upon axis" [axes?] " or pins fixed in the side pieces, the bearing or journal being in " the roller instead of the side pieces, though the journal may be " in the side pieces, if prefered. This skate is intended to be " used upon a floor or carpet and not upon ice, and its arrange- " ments with the elastic rollers enables the wearer to go through " the same evolutions with it without slipping laterally that he

" could perform on ice with an ordinary grooved skate made for " that purpose."

[Printed, 4*d*. No Drawings.]

A.D. 1860, September 24.—N° 2321.

HINE, Joseph.—(*Provisional protection only.*)—" Improvements " in markers for billiards, cricket, whist, or other games of skill " or chance, a modification of which is also applicable for indi- " cating years, months, days, and dates."

" This invention consists of one or more discs or surfaces of " metal, ivory, card, or other suitable material, so arranged that " they shall show or register the required number whether the " number be that of each point, or number of the game, the " number of games or the resulting rubbers (if such be played), " as won or lost by each party. These discs or surfaces are so " arranged that no alteration in the indicated number can be " made without striking an alarm which intimates to the players " and by standers that an alteration has been made in the numbers; " and these discs or surfaces registering the numbers cannot be " reversed so as to show a lower number than that indicated " when the last alarm or stroke in moving the marker has been " sounded."

" The disc has figures or numbers marked thereon, and is " placed behind a dial having a hole in the face, and is turned " by hand by means of a knob on the outside so as to expose " one or more figures to view as required. At the back of the " disc is a ratchet wheel furnished with as many teeth as there " are numbers on the disc, and a spring acts against the said " teeth so as to prevent the disc from being turned in the wrong " direction, and the sound of this spring overrunning the teeth " indicates that the score is being altered;" the number of clicks show the number of points scored. When more than one disc is required to register the points, &c., the additional discs may " be connected to the main disc by suitable toothed gearing."

[Printed, 4*d*. No Drawings.]

A.D. 1860, October 13.—N° 2497.

DEAVIN, Martin.—" An improvement in gymnastic appa- " ratuses, known as see-saws, and an improved mode of working " the same."

1st.§" Constructing gymnastic apparatuses, known as ' see-saws,' " with contrivances for adjusting the same in such manner that " when the two ends of the see-saw are occupied " by unequal weights, "the rocking beam may be readily brought to balance " about its centre of motion." A rack or racks is or are " attached " to the bottom of the rocking beam," and corresponding teeth are "placed upon the axle on which the rocking beam turns, such " axle being fitted with a handle for imparting motion to it. As " the handle is turned the said beam will be caused to move in " one or other direction, according to the direction in which the " handle is turned."

2nd. " A mode of working see-saws by means of cords or ropes " attached to an upright pole forming part of the machine, or to " any other convenient object, such cords or ropes being pulled " upon by the occupant or occupants of the apparatus." The inventor prefers "in some cases to pass the cords or ropes round " a pulley or pulleys for the purpose of changing the directions " of the same, and of varying the distance through which the pull " of the occupants may be exerted."

In manufacturing the said see-saws, the inventor prefers to " fit a seat, or two or more seats, at each end of the rocking " beam," and he places "a spring or springs upon each end of " this beam at the under side for the purpose of preventing the " ends from striking the floor or ground with violence."

[Printed, 8*d*. Drawing.]

A.D. 1860, December 13.—N° 3063.

PITTS, Samuel.—" Improvements in billiard tables."

"This invention consists in retaining the cushions of billiard " tables in a pliable or flexible state in cold weather or in cold " climates by means of a gradual heat, or softening them when " they have become hard and rigid."

Pipes or tubes are placed in connection with the cushions, either behind or through them, and a current of hot air, water, or steam is passed through the said pipes, by which means the cushions are kept at one uniform temperature. This invention is for the purpose of enabling the native india-rubber to be used in lieu of the vulcanized.

When hot air is employed, a fan is attached to the egress tube, and to the ingress aperture is affixed "a tube or pipe of metal " *communicating* with a stand made to receive a piece of iron

" pipe." The said iron pipe can be heated, and, when red hot, can be replaced in the stand. When the fanning apparatus is put in action streams of hot air circulate throughout the cushions, and they in a few minutes become softened.

When water is employed, the heated water from a portable boiler is forced through the pipes that are in connection with the cushions, by the aid of a force pump or other apparatus. Either the water may be heated in the said boiler by means of gas, coke, or other means, or the said boiler may be filled with hot water, thus dispensing with the gas, &c.

When steam is used, a small boiler is properly supplied with water; the said small boiler has "no outlet but through the " cushions." When heat is applied, the steam is driven " through the cushions and out through a waste pipe."

[Printed, 4*d*. No Drawings.]

A.D. 1860, December 24.—N° 3156.

NEWTON, William Edward. — (*A communication from William Henry Stevens and Benjamin Rigal Norton.*)—(*Provisional protection only.*)— " An improved archer's bow and bow gun " toy."

1st. " A metal bow for throwing arrows, which may be made of " a round, square, or flat wire rod, so shaped and tempered that " it will combine strength with elasticity or spring. This object " is effected by forming one or more coils in the bow, which is " provided with a jointed wire string, whereby it is bent or " strained. This wire string is made with two joints near the " middle, so that when the wire cord is drawn it will bend at the " joints instead of bending the cord itself."

2nd. " A toy bow gun for throwing balls. This bow gun is " furnished with the above-mentioned bow, and is constructed " with a breech-loading barrel, which communicates with the " barrel through which the bow-string passes at a point in " advance of the bow-string, at which point an elastic obstruction is introduced for retaining the ball until it is struck by the " bowstring, or a rod which may be connected to the bowstring. " The wire cord or string, when drawn back ready to discharge a " ball, is retained in position by a hooked lever, and is discharged " by a trigger."

[Printed, 4*d*. No Drawings.]

1861.

A.D. 1861, January 5.—N° 40. (* *)

LUCK, William.—" An improved table or article of furniture," opening out into a bagatelle board. The frame, which stands on two legs, supports "a sort of oblong tray, having three upright " sides," and forming one half of the bagatelle board. Cross bars are screwed to the tray, one at each end; and to each bar is fixed a vertical bar, which slides up and down in a mortise in each leg and rests on a spring therein. The table top, having its under surface fitted up as the other half of the board, is hinged to the ends of the sides of the tray; when it is lifted the tray rises, and when it is turned back it rests on a telescopic slide to which a folding leg is hinged. For adjusting the level the feet of the legs are "balls with threaded shanks," and a screw in the framing abuts at top against the under surface of the tray. The top and tray may be fitted up for other purposes.

[Printed, 10*d*. Drawing.]

A.D. 1861, January 19.—N° 149.

LATHAM, Robert Marsden.—(*A communication from David R. Smith.*)—" Improvements in the construction of children's " rocking toys."

These improvements are applicable to rocking horses and rocking vehicles; a rocking horse only is described, as the arrangements are alike in both cases. "The body of the said horse is " supported upon a pair of helical, spiral, or other wound springs, " the outer ends of which are secured to the under side of the " horses' hind legs; their extreme ends are connected to a cross " bar or axle within the base on which the said horse is mounted. " The weight of the said horse and its rider overhangs the said " springs, and but little effort is required on the rider's part to " give the necessary motion to the horse's body. A flat steel " spring is secured at one end to the said cross bar or axle end, " and at the other end to the horse's chest, which, by acting as a " check spring, prevents the said horse from rocking backwards " or forwards too far. The said cross bar or axle is held in its " place by bolts screwing into its ends through the sides of the " said base, and by pegs or projections on the ends of the said " axle fitting into corresponding holes in plates fitted on the

" inner sides of the base; the said horse can be adjusted, that is, " elevated or depressed, to suit different weights, by loosening " each of the bolts holding the said axle, and by drawing out " one of the sides of the base sufficiently to allow the shifting " of the said pegs or projections into different holes, in which " they are retained by tightening up the bolts as before."

[Printed, 6d. No Drawings.]

A.D. 1861, February 25.—N° 482.

CLARK, George.—" An improved method of connecting and " fastening together blocks, plates, or slabs of wood, metal, or " any other material."

Amongst other purposes, this invention may be used for billiard tables.

"The surface of the side of each plate to which the fastening " is to be affixed is made level," and, if necessary, planed smooth. " Into and across this side of each plate, at equal distances from " the ends and the centre, and from each other, bevelled grooves " or slots are cut to the depth of about one-third or one-fourth " of the thickness of the plate, and of any suitable width." The number of these slots is according " to the length of the plates, " and the use to which they are to be applied;" they are dovetailed, are cut precisely similar, "and in the same position on " each plate of a series intended for the same work, so that a " bevelled rod or tongue" " will fit into each of the grooves." Rods of metal or wood are formed into bevilled tongues that pass easily through the grooves, but without any lateral play. The plates are placed in courses, "and are connected with each " other in any required number, and fastened together by reeving " the tongues through the slots. By breaking joint alternately " with every course or strake, the plates thus connected are inter- " laced with each other, and become one compact mass."

The application of this invention to covering ships with iron or with armour plates is described at length, and shown in the drawings.

[Printed, 8d. Woodcuts and Drawing.]

A.D. 1861, February 26.—N° 496.

BARTHOLF, John Henry. — (*Partly a communication from Jesse Adams Crandall.*)—(*Provisional protection only.*)—" An im- " proved construction of rocking-horse."

"The object of this invention is to construct a rocking-horse
" which shall when in action closely imitate the natural movement
" of a cantering horse, and shall in addition avoid the incon-
" veniences attendant on the use of rocking-horses of the ordinary
" construction. The horse I mount on a hollow pedestal or a
" base frame fitted with a cross-bar, which runs through sockets
" formed in the hind hoofs of the horse, and under the belly of
" the horse I place a bent spring or springs, one end of which is
" attached to a cross-bar near the front of the base frame, and
" the other end to the horse just under its chest. Or I may use
" in lieu thereof coiled springs connecting the hind legs of the
" horse to a cross-bar or base frame. The horse is fitted with a
" saddle and bridle and stirrups, as usual, and the motion of the
" child on the back of the horse will set it in motion, and cause
" it to rock on the cross-bar that passes through the hind hoofs of
" the horse, the spring as it yields to the forward pressure of the
" child's body allowing the horse to make the plunging move-
" ment, and then by its recoil action throwing up the horse into
" an elevated position. By this arrangement of rocking-horse it
" will be seen that the child instead of merely oscillating on his
" seat will take the movements and consequently the exercise of
" a horseman."

[Printed, 4*d*. No Drawings.]

A.D. 1861, March 7.—N° 578. (* *)

KENNEDY, WILLIAM SADLER.—"An improved method of
" and apparatus for imparting the motion of riding to wooden or
" metal horses, part of which is applicable to cradles and other
" similar appliances."

The horse stands on a pedestal of convenient depth; the portions on which the feet rest are detached and fixed to springs, by preference coiled springs, which are secured to the bottom of the pedestal. The action of the horse is assisted by a standard (on each side of the stationary part of the pedestal) on which the rider places his foot at pleasure. The springs may be placed in the body of the horse and rest on a platform which is supported on uprights from a base. Other modifications of the position of the springs are shewn in the drawings. Castors are attached to the pedestals or bases. The springs may be placed under a cradle; they may rest on or form part of the legs of a cot.

[Printed, 1*s*. Drawings.]

A.D. 1861, March 20.—N° 700. (* *)

GEDGE, WILLIAM EDWARD.—(*A communication from Jules Cordier.*)—(*Provisional protection only.*)—" An improved fabric " for covering billiard and bagatelle tables, and other similar " uses."

" This invention consists in substituting, in lieu of the " woollen cloth with which a billiard table is usually covered, a " woven fabric, both warp and woof of which will be cotton."

[Printed, 4*d.* No Drawings.]

A.D. 1861, March 20.—N° 705. (* *)

CHAPPELLIER, MARIE JOSEPH FIRMIN.—" Improvements " in manufacturing playing cards."

The object of this invention is to hold the cards, by means of mechanism, during the time their corners are being ploughed or cut and metallized, and also to dry the same by machinery. The apparatus consists of a number (ten are shown in the drawings) or a set of presses arranged upon a frame or support, each press having beneath it an apparatus termed an " adjusting apparatus," and also a tube, hollow shaft, or arrangement for drying the card corners. The cards having been adjusted by the adjusting apparatus, are pressed together by a screw, and the corners ploughed off by a convex gouge. The cards are then metallized and ornamented with gold, silver, &c., on the card corner. In using gold, the metal is laid with a layer of glue, mixed with size, instead of paste. After being metallized, the corners are rapidly dried by a current of air sent through a hollow shaft.

[Printed, 6*d.* Drawing.]

A.D. 1861, April 20.—N° 981.

NOIROT, JEAN BAPTISTE JULES.—" An improved process for " manufacturing india-rubber pipes."

1st. A " continuous mode of fabrication of tubes, solid lengths, " ornamental mouldings, washers, billiards-table bands, tubes, or " sheathes obtained from india-rubber, gutta percha, and the " like gums," by means of a flatting apparatus.

2nd. Various arrangements and modifications of the said apparatus.

The apparatus "is composed of two flatting cylinders turning "towards one another and compelling the mass being prepared "and thrown into a hopper to pass through a gauge plate." In obtaining solid lengths, there is no central core to the gauge plate; the diameter of the holes is suited to the size of the products to be obtained. "For billiard-table bands & for mouldings, embossed or not," the inventor makes "use of draw plates with "or without their cores and of suitable profile." The cylinders are hollow and are heated by a current of steam. The mandrils or cores are made with holes "for the purpose of equalizing the "pressure of the material between the two cylinders, and in all "parts of the feed hopper, and also obtaining solid or hollow "products perfectly homogeneous throughout their section and "length."

Modifications in the number, relative speed, direction of turning, locality, and position of the cylinders are set forth, but only the following modification is preferred :—"One of the cylinders may "be so disposed and arranged as to free the draw plates, and "the better direct to the products in course of fabrication."

[Printed, 6d. Drawing.]

A.D. 1861, April 27.—N° 1067.

STORY, George Marvin, and EDWARDS, George William.—"Improvements in billiard tables."

This invention relates to billiard tables that (when not required for the game of billiards) "may be folded and reduced to a smaller "size and lessened in height, so as to render them suitable for use "as ordinary library or dining tables." For this purpose the frame of the table is made telescopic. "The top or bed of the "billiard table is divided into two parts, which are hinged together at the centre, so that one-half may be folded over "the other half to reduce the top of the table to half the size of "the billiard table. The telescopic frame also is made capable of "sliding to a corresponding extent. When the billiard table is "so folded, the under side of one-half of the bed of the same "forms the top of the ordinary table, and it is suitably constructed for the purpose."

In order to raise the top of the table to the height required for billiards, "the half of the bed which is connected to the frame is "attached thereto by means of four rods of equal length, each

" hinged at one end to the frame, and at the other end to the " under side of the bed." Thus " the bed can be lifted up off " the frame to the required height, in which position it may " be secured by blocks or screws placed so as to prevent the rods " again folding down. When this is done the folding portion of " the bed is opened out, and when opened will rest on supports " which turn up from the top of the frame."

This table when opened out may also serve as a dining table, suitable flaps being placed on it.

The drawings also show a table in which the frame does not expand and the top does not fold. The raising apparatus is actuated by a screw, nut, and arm.

[Printed, 1*s*. 6*d*. Drawings.]

A.D. 1861, May 7.—N° 1146.

STEVENS, CHARLES.—(*A communication from Henry Galante.*) " Improvements in gutta percha & india-rubber toys."

" The toys are made at present by simply moulding the gutta " percha or india-rubber into the form of the animal or object, " then painting it so as to make the resemblance more complete; " this is very injurious when the articles are intended as toys, " from the habit children have of putting their playthings in " their mouths, as they suck off the paint, which is often of a " highly poisonous nature."

The said improvements are :—" The gutta percha, india-rubber, " or a combination of both, is first moulded so as to resemble " the object intended to be represented; it is then coated over " with a glue of suitable nature. I do not indicate any glue in " particular, as provided it be sufficiently strong, the object is " obtained. The natural covering is now given to the moulded " form; thus, if it be a bird, it is covered with feathers, which " are stuck on by means of the glue with which the form has " been previously coated. For animals having fur the operation " is the same, the fur taking the place of the feathers.

" The mode of proceeding is the same in all cases, the outer " covering being alone changed; skins serving for certain animals, " and silk, or a similar suitable tissue, for covering dolls. Butterflies and certain other insects are covered with silk, lustre, or " other suitable powder."

[Printed, 4*d*. No. Drawings.]

A.D. 1861, May 17.—N° 1260. (* *)

PITTS, Samuel.—" Improvements in billiard and bagatelle " tables," whereby they can be readily converted into dining or ordinary tables. Hinges or other suitable contrivances are applied to the cushion frames, " so that they can be turned down under " the table or taken off." When they are turned up " the corners " are secured together by means of extra corner pieces furnished " with studs which drop into openings or slotted plates on the " ends of the cushion frames," or they may be fixed " by screws, " levers, or brackets." The tables may have pockets attached to them by thumbscrews.

[Printed, 6*d*. Drawing.]

A.D. 1861, June 29.—N° 1664.

CLARK, William.—(*A communication from Thomas Hanlon. George Hanlon, William Hanlon, Alfred Hanlon, Edward Hanlon, and Frederick Hanlon.*)—(*Provisional protection only.*)—" A new " locomotive apparatus having a movement resembling walking."

" This invention is more especially intended to be applied to " dolls and other toys, but may be applied to other uses. It " consists in a frame or box supported upon legs and feet, which, " by the action of a spring or other motive agent within the said " frame or box, are caused to have an alternating step-by-step " movement resembling that of walking."

The apparatus consists of a frame carrying an ordinary train of wheelwork, actuated by a mainspring and governed by a fly. Slotted slides are attached to opposite sides of the frame by means of pins, upon which the said slides are free to work up and down in parallel planes; each slide carries the pivots belonging to one leg. Two straight parallel bars represent one leg; each leg is jointed at the knee and carries a foot. Each leg has the requisite motions imparted to it by means of an eccentric fixed on the second spindle of the train; the said eccentric working between the parallel bars, and between " yoke pins," secured in one of the bars. The result of this motion is that, when one of the legs is risen up (by means of the " yoke pins ") it is also moved forwards and brought to the ground at the time that the other leg is ready to take a step, owing to the relative positions of the eccentrics on their axle. The eccentrics carry wipers that act upon rods to produce the flexure of the knee joint. Certain plates attached to each foot extend "laterally toward the other foot beyond the "centre of gravity of the whole apparatus."

[Printed, 6*d*. Drawing.]

A.D. 1861, August 15.—N° 2035.

HUTCHINGS, JOHN THOMAS.—(*Provisional protection only.*) —"An improvement in the construction of tennis and racket "bats."

"My invention consists principally in the combination for such "purposes of india-rubber, either by itself or in any of its "various plastic compounds, or any other similar and suitable "material.

"I make the india-rubber or compound material pulpy in the "usual manner, and in such pulpy state place it in a mould of "the required shape or form, where it remains until it has undergone the usual process of hardening, so as to give it the consistency and strength of what is known as ebonite, or otherwise "known as vulcanite, and usually called hard rubber. I then "remove them from the mould and finish off by burnishing.

"In some cases, such as when unusual lightness is desirable, I "use paper, and form it in moulds, as before stated, and when "sufficiently dry and hard I remove it from the mould and finish "off in the ordinary way.

"The advantage of this invention is, that unlike the bats at "present in use, they will retain their uniform shape for any "length of time; not liable to be affected by climate or temperature; consequently the use of presses, as heretofore, will not be "required to force them into shape."

[Printed, 4*d*. No Drawings.]

A.D. 1861, September 4.—N° 2200.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Gustave Tautain.*)—(*Provisional protection only.*)—"A new or "improved parachute toy."

"This invention consists in constructing a parachute toy by "combining with a parachute a box, which is used for throwing "the toy in the air, as hereafter explained, and which is fixed to "the parachute by threads. The box folds or doubles up at the "centre and forms a case in which the parachute and connecting

" threads are enclosed. Doubled up, and with a string with a " weight at the end wound two or three times round two points " in which the ends of the case terminate, the toy is thrown into " the air, the string unwinds from the points, when a spring " causes the case to open and assume somewhat the shape of a " boat. The parachute expands, maintains its position over the " boat-like case, and after the manner of a parachute of an " aerostat, the toy descends slowly."

[Printed, 4*d*. No Drawings.]

A.D. 1861, October 26.—N° 2690.

GREENWOOD, Robert Benjamin.—(*Provisional protection only*.)—" An improved billiard rest."

" This improved billiard rest is intended chiefly to be used " instead of the rest usually employed with the long cues termed " the 'whole butt' and 'half butt,' when making a long reach " in the game of billiards; but it may, if desired, be used " throughout the whole game instead of forming a rest with the " left hand, as usually practised.

" The improved rest consists of a small carriage mounted upon " two wheels, which are turned true and accurately fitted, both " fast upon the same axis. The carriage is provided with a split " taper tube, by means of which it is readily adjusted on and " removed from the end of the cue. It will be evident that " when this rest is applied to the end of the cue the wheels " running on the surface of the table will give greater freedom " of movement than any ordinary rest, and will also ensure " greater accuracy when the blow is given, as the point of the " cue is sure to advance along the same line on which it was " drawn back. Ladies will also be enabled to play billiards with " the cue, by the aid of this improved rest."

[Printed, 4*d*. No Drawings.]

A.D. 1861, November 4.—N° 2765.

ANDERSON, John Corbet.—(*Provisional protection only*.)—" Improvements in apparatus for projecting cricket balls with " accuracy."

" The invention consists of a circular barrel" " to which is " attached two double bows." Within the barrel is a cup " to " contain the ball, which cup is connected to the bows." " On

" the upper and lower sides of the barrel are longitudinal open-" ings" "for the purpose of allowing the connection between " the cup and the bows" "to traverse." Attached to the back of the cup is a strap, which is wound round a drum by means of a winch. Attached to the drum on the outside of the barrel is a stop wheel, and on the same axle is the winch. Fixed to the outside of the barrel is a stop trigger. Near the muzzle are trunnions "for the purpose of keeping the barrel in position." Underneath the head of the barrel is an "elevating screw" "for " the purpose of raising and depressing the head of the barrel so " as to command the desired elevation." The instrument is attached to an iron frame by means of the trunnions and the elevating screw. The iron frame revolves on its axis upon a wooden frame. By means of a sighting apparatus accuracy of projection is ensured. To use the instrument the ball is first placed in the cup through the muzzle; by then turning the winch the drum revolves, when, by means of the strap, the cup and also the bows are drawn back the required distance, the stop trigger retaining them in position. The winch being shifted by depressing the handle of the stop trigger, " the bow is liberated and the ball is " projected from the barrel."

[Printed, 6*d*. Drawing.]

A.D. 1861, November 9.—N° 2820.

BROOMAN, Richard Archibald.—(*A communication from Gustave Xavier Tautain, and Louis Alfred Coquet.*)—(*Provisional protection only.*)—" An improved spinning toy."

" This toy is constructed as follows :—A spherical ball is fixed " loosely upon a spindle, which passes through and is a fixture " with a wheel, the rim of which may be round, square, flat, or " of any other form, and is united to the boss by curved arms. " A string is wound upon a grooved collar, fast on the spindle, " and by rapidly withdrawing the string the toy is made to spin. " Sometimes the sphere is repeated below as well as above the " wheel."

[Printed, 4*d*. No Drawings.]

A.D. 1861, November 29.—N° 3008.

CARLE, Louis Henry Christian Jacob.—" Improvements " in means or apparatus for indicating and registering the 'score' " *for billiards* and other games."

This invention "consists in applying self-acting registering "apparatus (for registering the number of games played) to the "boards or marking instruments" employed for the above-mentioned purposes.

In an apparatus having a pointer that slides in a straight groove or slot "the pointer is formed with a click or catch at the "back which takes into a toothed rack supported in bearings "and enclosed in a case at the back of the board or instrument "on which the numbers for marking the score are placed." The pointer can therefore only move from zero upwards, but when it arrives at the end of the slot, and indicates, say 50, it acts upon a pin, "which gives a small amount of motion to a wheel on the "face of which numbers are marked from zero upwards, which "numbers are brought forward in succession opposite to an "opening in the case so as to be seen from the exterior." When the pointer arrives at the extremity of its movement, an incline thereon acts upon the toothed rack, so as to revolve it partially and thus disconnect the click and allow the pointer to be put back to zero; the rack is returned to its former position when the pointer arrives at the starting point.

The drawings also show a "circular self-registering and indi-"cating apparatus," in which a circular dial plate (marked up to 50) has two pointers, one of which is fixed upon a central axis and gives motion to it in one direction only; at each revolution of the hand, a corresponding number on an internal dial plate is brought to view.

Other modifications are described.

[Printed, 1*s.* 4*d.* Drawings.]

A.D. 1861, December 19.—N° 3185.

TREUILLE, ALPHONSE, and **TRAXLER**, FRANÇOIS XAVIER.—(*A communication from Joseph Prosper Olier.*)—"Improve-"ments in the manufacture of paper and card paper or cardboard, "with the object of preventing forgery and alterations in cheques "and other documents, and which improvements are also "applicable to the manufacture of playing cards and railway and "other tickets."

1st. "Superposing three layers of pulp by successive immer-"sion of the moulds in the vats."

2nd. "Superposing on the mould two layers of pulp, which "*after coagulation* are led upon a felt, and covered afterwards "*with a third layer*, taken up separately."

3rd. "Superposing on a felt three layers of pulp taken separately out of the vats."

The second and third improvements are not mentioned in the Provisional Specification.

"As regards playing cards, by interposing a layer of colored pulp between two layers of white pulp, the desired opacity will be obtained; and cards thus made are not liable to divide. By a similar process, and by placing a filigree inside, the collection of the tax due for the manufacture of playing cards can be readily secured, and forgery prevented in railway or other tickets."

To prevent the first layers from breaking when immersed in the vats, the mould is lined with a piece of wirework; the intermixing of the colored pulp with the white, when the mould is immersed, is "prevented by placing the mould which has received the first layer in a casing, with wirework or other suitable bottom."

To promote opacity, pulverised silicate of magnesia is added to "the white pulp intended for external layers."

[Printed, 4*d*. No Drawings.]

1862.

A.D. 1862, January 25.—N° 195. (* *)

MOUGIN, JEAN CLAUDE FRANÇOIS.—"Improvements in barcelonnettes or cradles for children or for dolls," imparting to them a "swinging, rocking, or see-saw motion. The cradle is of ordinary form, but having the top fixed to the bottom with iron or wooden plates. It is suspended by the middle between two posts or by the top upon steel plates. "A movement of clockwork is adapted similar to a roasting jack." The patentee gives a detailed description thereof. The rocking is effected "by means of an excentric wheel encompassed by a collar which extends at will;" the wheel is fixed against the bottom of the cradle at either the head or foot. The rocking can be varied "by a connecting rod and winch fixed at one end to the staff of one of the springs of the movement, and at the other end to the

" cradle itself to turn or slide in a flat plate of iron or copper " which is attached to the bottom of the cradle." A dial marks how many times the cradle has been rocked. Or the cradle may be rocked " by one or two weights according to the springs employed to obtain a more prolonged motion." In this modification, " two posts are added at the head and foot of the cradle;" between the posts two pulleys are placed at top, which " receive " the cords or chains to which the weights are attached. Between " these same posts the weights will descend as if in a groove " without being able to turn aside."

[Printed, 4*d*. No Drawings.]

A.D. 1862, February 13.—N° 389. (* *)

BURROWS, George Crisp.—" Improvements in lounges, " seats, or other apparatus for sitting or reclining on, which " improvements are also applicable to rocking-horses."

The last-mentioned application of this invention is as follows: —A rocking-horse may be mounted on a base forming two sides of a triangle, the centre of motion being the apex, " which may " be a pair of small wheels."

[Printed, 8*d*. Drawing.]

A.D. 1862, March 12.—N° 676.

TOLHAUSEN, Frederick.—(*A communication from Jean Marie Charles Martin.*)—(*Provisional protection only.*)—" An improved " kind of spinning or humming top."

" This invention consists in so colouring the outer surfaces of " tops, or humming tops, that when set spinning or quickly " rotating, they shall exhibit a pleasing combination of circular " stripes of various colours, hues, and shades. I attain this " object by covering the flat, cylindrical, or other surfaces of tops " with pieces of coloured paper, pasteboard, glass, paint, or other " chromatic substance arranged in any symmetrical way so as to " produce the desired effect. Thus, by using the colours of the " solar spectrum, I obtain by rapid rotation a uniform white or " greyish tint, or by applying orange or yellow ovals running into " points at both radial ends on a black ground, I obtain a bright " orange circle beautifully shading off into dark black, and so " forth, an infinite variety of combinations being obtainable in " the manner indicated."

[Printed, 4*d*. No Drawings.]

A.D. 1862, March 18.—N° 754.

BEAUMONT, André Alexandre, and ESCALIER, Joseph Augustin.—(*Provisional protection only.*)—" A new kind of flying " top."

" Our invention consists in the construction of a hollow top " forming the centre of a helix, to which it is fixed; the lower " part of the top is reduced in size to allow of its being adjusted " to a handle made to receive it. The handle is hollowed out " cylindrically at its upper part in order to contain a bobbin, on " which a small cord or piece of string is wound for giving a to-" and-fro motion to the bobbin, which is provided at its upper " part with a cup of a concave form to receive with facility the " top. A hole is made in the handle for the passage of the cord " or string. This toy is used by holding the handle in one hand, " and imparting a rotatory motion to the bobbin to wind up the " string. The top is then placed in the cup, and it is only neces-" sary to pull the string to cause the top to fly off and turn in a " vertical direction. If care be taken to hold the handle verti-" cally when the top descends, it may be caught in the cup at the " upper part of the handle.

" For two to play with the top, the handle should be kept in a " somewhat inclined position, then the top may be made to de-" scribe a curve, which allows of another player, provided with a " similar handle, similar to that before described, to receive the " top and throw it off in his turn. Two players may thus receive " and throw off the flying top alternately. The new plaything " may be constructed of various materials, forms, and dimen-" sions."

[Printed, 4*d*. No Drawings.]

A.D. 1862, April 8.—N° 999.

JAQUES, John, junior.—(*Partly a communication from William Fowler Mountford Copeland.*)—" Improvements in the instruments " used in the game of croquêt."

A marker, to show the hoops through which each player has played his ball, is placed on the hoop or arch last played through. The marker consists of a plate of elastic metal, bent in the middle so that " a space is left between the two surfaces somewhat less " than the thickness of the hoops or arches, so that a marker " when pressed down on a hoop or arch will by its elasticity

" retain its position by slight pressure. The markers may be of " different colors, or be numbered, or have devices thereon, in " order to indicate the players to whom they belong, and they " may also be made to indicate the direction in which the balls of " the players have been played through the hoops or arches."

The under surface of the head of a croquet mallet is formed "of " a curved convex shape, with upright or nearly upright sides " and ends, the sides being made somewhat hollow or concave " from end to end. The two ends of the head of a mallet are of " different dimensions, the larger end is of a rectangular form, " somewhat wider than it is high; the other or smaller end is also " of a rectangular form, but of considerable width as compared to " its height, the object being that this end of the mallet should be " used by a player when striking his ball at the time his foot is " placed thereon."

[Printed, 6*d*. Drawing.]

A.D. 1862, April 10.—N° 1026.

LILLYWHITE, John, and NIXON, Thomas.—(*Provisional protection only.*)—"An improved bowling apparatus for cricket " balls."

"On a foundation plate of iron, which is to be pegged or " fastened to the ground behind the wicket, a standard is secured, " on the top of which a horizontal bar is so arranged by means of " a pivot (to which it is hinged) working in a socket in the " standard as to allow of being turned horizontally thereon. One " end of this bar is furnished with a cross piece, each end being " bent upwards to form vertical arms, to which are attached the " ends of a powerful vulcanized india-rubber strap or band; the " other end of the bar is also bent up, and the centre of the band " is pulled back thereto by means of a leather loop, and held by a " catch, and the ball having previously being placed in the centre " of the band while being drawn back will be firmly retained by " the compression of the rubber. A trigger is arranged to work " on a pin let into the bar, and is acted upon by coming into " contact with a projection on the top of the standard. The apparatus is to be so placed that when charged by the ball the " bar shall be at right angles to the line of the wickets; when the " batsman is ready the bar is turned on its axis, and on arriving " in a line with the wicket the projection acts upon the trigger

" and catch and releases the india-rubber band, projecting the " ball accordingly. Regulating screws, situated near the pivot, " elevate or depress the bar and the direction of the ball, and also " regulate the discharge thereof by contact with the projection " and trigger."

[Printed, 4*d*. No Drawings.]

A.D. 1862, April 14.—N° 1076.

BROOMAN, Richard Archibald.—(*A communication from Amedée Constant Ponceau.*)—" An improved hobby horse."

The Provisional Specification states that the said hobby horse is "caused to move on wheels with motions corresponding with " those of the animal at full gallop. The horse itself and the " mechanism for imparting motion thereto are supported upon " a frame mounted on four wheels. Two uprights near the " centre of the frame support a fixed axis, which latter carries " two pulleys; vertical rods from this axis support the body of " the horse and carry pulleys at their upper end similar to the " others. The head is pivoted about an axis which carries a " pulley inside the body; a cord or band passes from this pulley " to those at the top of the uprights, which, descending to the " pulleys at the bottom thereof, is led to a guide pulley below the " frame where the ends cross one another and are passed in a " reverse direction round a large pulley, the axis of which supports " the fore wheels of the frame." Motion is communicated by means of the rear wheels of the carriage.

The Final Specification states that " this invention consists in " the construction of a hobby horse styled by the inventor 'galo- " 'cipede.'" The inventor prefers " to fit only one front guide " wheel" to the frame that carries the axle of the hind wheels. A crank on the said axle, united to a rod fixed under the tail of the horse, imparts up and down and to-and-fro motions; there is also a rod jointed to the frame and attached to the body of the horse. The rider alternately brings his weight upon the saddle and upon the stirrups, taking hold of an upright rod which passes through a slot in the horse's shoulders. The horse is turned to the right or left by means of the said upright, which is connected (by means of rods or chains) to the plate which carries the axle of the fore wheel.

Clockwork may be used as the motive power.

[Printed, 8*d*. Drawing.]

A.D. 1862, May 7.—Nº 1367.

BROOMAN, Richard Archibald.—(*A communication from Joseph Ellicott Holmes.*)—" Improvements in swings."

" The object of this invention is to construct a swing which can " be operated by the hands or by the feet, or by the hands and " feet combined, of the person or persons seated in it. I attach " ropes, straps, or bands in front of and behind the ordinary " point of suspension, their lower ends reaching and being at- " tached to a movable cross bar or sliding thimbles placed a few " feet above the seat; a rope or strap, with a loop or handle, to " be taken hold of and pulled by the person or persons seated in " the swing, is suspended from the cross bar. I attach a foot " board beneath the seat, the front of which is connected by " a rod or rope to the cross bar. The seat is suspended in the " ordinary manner. On the person or persons seated in the " swing pulling the rope suspended from the cross bar, or pushing " the foot board with the feet, or using both hands and feet, the " swing will act or be set in motion. The cross bar is by prefer- " ence made to slide on the ordinary suspension rods or ropes."

" If the person seated in the swing puts a further strain, either " by the hand or feet, or both, when the swing is passing from " the centre outwards," " the force so exerted will tend to bring " the swing to a state of rest."

[Printed, 8*d*. Drawing.]

A.D. 1862, May 10.—Nº 1403. (* *)

CLARK, William.—(*A communication from Jean Louis Abeilhou.*) —" The application of a vegetable fibre alone or in combination " with other matters in the manufacture of felted and other " fabrics, also a substitute for flock or powdered wool, and as a " material for padding or stuffing, and for other useful purposes." This invention consists in utilizing the down of " aquatic plants " technically termed ' typha,' and commonly known as reeds or " bulrushes." The down is dried and separated from the seed, after which it is purified and worked " until it possesses the fine- " ness of silk and has a silvery appearance." Next comes " the " felting operation," and as the down is too short to be employed alone, " one-third or half the quantity of hares' or rabbits' hair, " *or it may be* hair of the beaver," is added to it, and the mixture is "wrought well" with "an arçon (an instrument used in hat "making)."

The patentee, after enumerating many purposes to which either the down or the felt is applicable, informs us that down may be employed, combined or not with india-rubber or gutta percha, for covering billiard tables.

[Printed, 4*d*. No Drawings.]

A.D. 1862, May 12.—N° 1416.

MILNES, JOHN.—"Improvements in portable apparatus for "exercising the human body."

"This invention consists in an apparatus composed of a ring, "hook, or loop, to which strands of india-rubber are secured to "form springs, with another ring (or hook) at the other end, "and to this I attach a swivel or other pulley, over which I have "a cord, with handles at each end, or I can pass the cord through "the ring and dispense with the pulley. Such handles are to "be used in any manner that may be considered necessary in "exercising the body. Instead of the india-rubber spring, other "springs might be adopted; the apparatus being hung upon "a hook upon a wall."

The said hook should be well bent over "to avoid the danger of "the ring working off when in use." The india-rubber spring is "composed of a number of rounded strands of vulcanised "india-rubber, secured by having a piece of leather placed at the "end, with string or cord wound tightly around the same, forming "a binder" binding the elastic material to the upper ring, and, by a similar binding, to the lower ring.

[Printed, 10*d*. Drawing.]

A.D. 1862, June 2.—N° 1654.

TEMPLAR, BENJAMIN. — "Improvements in apparatus for "registering and indicating billiards and other games."

The case for registering billiards has sliding pointers as usual, that can be slidden along a groove so as to point to certain numbers up to, say, 14 (to register the "canon" game), the numbers, however, are marked on longitudinal rollers that can be so turned as to expose sequential sets of numbers as the games proceed. "Each roller is provided with an eccentric acting on a bar to "which catches are jointed; these catches act on a ratchet wheel" with, say, 10 teeth, "and the catches are jointed to the bar in "suchwise that in rising they move the wheel round for one "tooth or two teeth, but in descending they pass without in- "fluencing the wheel." On the back of a numeral wheel, attached to the ratchet wheel, is "a peg acting at every revolution "thereof" on an indicating wheel. When the bar has "been "raised by one eccentric it is beyond the reach of the other "eccentric and so prevents the game being twice marked."

In the game of pool, each slip showing the "lives" of the players "is provided with a slide with a loose catch acting on an "indicating wheel."

In case a player desires to "star" three lives, each groove for the slips is furnished with two short slips, the former being marked with a star, and the latter with an extra life. The indicating wheels of each slip tell in how many pools the said slip has been used, and, by a method of subtracting, "the proprietor "may know how many pools of various kinds have been "played."

These improvements are applied to the billiard-marking board of the usual construction, with eccentrics and a bar, as above.

[Printed, 10*d*. Drawing.]

A.D. 1862, July 12.—N° 2013.

BARBER, HENRY, and DE GARRS, HENRY.—"Improve- "ments in rolling iron, steel, and other metals, for cutlery, tools, "and other purposes."

This invention consists in rolling the said metals "in such "a manner that the material when rolled, shall vary in thickness "across its width so as to correspond with the varying thickness "of the article for which it is intended."

The ingots are cast as nearly as practicable "in the same pro- "portion crosswise as the articles intended to be rolled are length- "wise;" rolls are "grooved proportionately to them." Taper rolls are used for all kinds of bevilled rolling.

Certain articles are rolled with eccentric rollers.

"In rolling steel for skate blades it should be rolled twice as "broad as the width of a single blade, and concave on both "sides, the thin centre forming the upper part of the skate "blade, and the stout outer edge the bottom of the blade," "and the blades are flyed off," "the curved toes coming out of

" the steel behind the heels of each other, and the fleams out of " the screw holes of each other respectively."

In rolling steel for skate clogs, it is rolled rectangular in form, and thin at both edges, with a small groove "running along the " under side for the blade to fit into; it is then to be flyed into " shape," "and the blades secured with screws in the usual " way."

In rolling steel for solid skates, it is to be rolled into the shape indicated above for the skate clogs, but it has the blade fast to it (giving the said rolled steel a **T** shape); it is "to be flyed off," " the toe part being afterwards finished by hand."

[Printed, 8*d*. Drawing.]

A.D. 1862, October 3.—N° 2672.

CLARK, WILLIAM.—(*A communication from Laurent Marie Réné Péan.*)—" Improved atmospheric toy pistols and guns."

A toy gun upon the principle of the pop-gun "is applied to " pistol canes, riding whips," &c.

The cork is attached to the piston "in such a way that in firing " the cork returns of itself into the tube, the string being only " of the same length as the piston or "ramrod." "A socket is " placed at the extremity of the barrel to receive the cork after " the explosion," so that it cannot escape, and "is always ready " to re-enter the barrel." If desired, the cord or string may be dispensed with. Instead of a socket, a bell mouth or a round rim may terminate the barrel. This system may also be applied, wholly or partly, "to cannons, guns, popguns, swords, or to " objects standing on their ends, such as figures or dolls;" a spring may be employed "to return the piston and cork to " position." In a double toy gun, having a piston at each extremity of a tube, and corks united to a central cord, a to-and-fro movement is imparted; in this arrangement, one cork is placed in position while the other is being fired. The said gun may be used in connection with a rocking horse, to "cause explosions."

The drawings show a pistol cane in which the cane forms the piston, also a pistol cane in which the piston is worked by the knob of the cane. Other improvements, described above, are also shown in the drawings. In a pistol flute, the piston is mounted with a "plate on which are fixed the tongues or reeds " for producing the sounds."

[Printed, 1*s*. Drawings.]

A.D. 1862, October 15.—N° 2777. (* *)

WILSON, William.—"An improved oblong drawing-room " bagatelle and billiard table with reversible top, and made in " various shapes and sizes."

The table top is so constructed that "the game is on one side;" this side "has a channel or rim" all round "for the balls " to run in," and at one end "a double or single indicator" made moveable "to direct the balls." The top when reversed forms a drawing-room table. "The stand is made with a frame " or rim for the game to be enclosed in, supported on a pillar and " claws or otherwise."

[Printed, 6*d*. Drawing.]

A.D. 1862, October 23.—N° 2858.

RÉE, Harry,—"Improvements in apparatus for exercising the " human body."

The exercise, by means of the said apparatus, is "analogous to " that afforded by the trotting of a horse."

"A two-armed lever is to be supported by a stand; a saddle is " fastened to a wooden frame, supported by the short end of the " lever, and by a combination of levers the saddle remains " always in a horizontal position when the two-armed lever is " moved up and down. On the longer end of the lever a move- " able ball is fixed, by which the weight of the rider may be " exactly balanced. The movement of the lever is caused by a " crank and fly wheel. The apparatus is formed more or less in " the form of a horse, but a saddle, bridle, and stirrups are indis- " pensable. On the shaft of the fly wheel two other cranks are " to be fastened, and two shafts go from the bridle to the fly- " wheel shaft, and by drawing the bridle, the apparatus is caused " to move. Under the saddle there are powerful springs, and " these springs are kept vibrating by the machinery, and the " rider derives the benefit of exercise similar to riding on " horseback."

Instead of using a combination of levers to support the wooden frame, certain "T-formed" pieces may be employed for that purpose."

"To reduce the friction to a minimum, a system has been " maintained through the whole machine with a very few excep- " tions," "to regulate the entire construction in such manner

" that any two parts which are to move upon or in each other " may be in contact on as small a point or space as possible."

[Printed, 8*d*. Drawing.]

A.D. 1862, October 29.—N° 2912.

CLARK, WILLIAM.—*A communication from Pierre Pradel.*)— " Improvements in apparatus for ascertaining and recording the " speed and distance travelled by vehicles, the flow and quantity " of water, and other analogous purposes."

This invention relates to a " diergraph," or " universal indi" cating apparatus," which (amongst other applications) may be applied to indicate " the lengths of various games which are paid " for by the hour, and the amount received by the attendants in " such establishments, especially in billiard rooms."

A paper band, wound on a reel, receives the various " chrono" metric points," the nature of which is determined by the operation to be controlled. " This band is divided and pointed by " the instrument itself." Two suitably-placed cylinders carry the said band with them in their chronometric motion. Piercers pierce the band at the commencement and at the termination of each operation, thereby registering the respective times and the duration of the operation.

"The hands which indicate on the exterior the duration of each " operation may start from zero at the commencement of each " hour's work, as, for example, in the application of the apparatus " to billiard rooms." The minute wheel is rendered independent of the movement each time the hand returns to zero, and is reconnected " every time a fresh engagement is commenced." A disc is fixed to hour-hand spindle, and another of the same size on the minute-hand wheel. A roller acts either on one or on both of the discs by means of a lever; " in the former case the hands partake " in the movement, while in the other case they are independent " of it. A snail placed on the wheel which carries the hour hand, " may, by the pressure of a lever, return the minute hand to the " starting point."

[Printed, 1*s*. 6*d*. Drawings.]

A.D. 1862, November 13.—N° 3057. (* *)

SLACK, JAMES.—" Improvements in nursery swings and cots;" also in swing beds " and other similar articles for nursery, house, " or other use," whereby the same are rendered " self-acting or

" capable of maintaining the motion imparted to them for a con-" siderable time."

The invention is described in the arrangement of a swing chair. There are two standards or side frames " with trans-" verse or cross tie pieces at top or bottom, or both," and from the tops of these a chair is suspended by slings, "in or upon " which the seat can be raised or lowered and fixed as desired, in " order to obtain the necessary equilibrium;" a safety strap is attached to the chair. To the tops of the slings is fixed "an " arched or otherwise formed head so as to oscillate with the " slings," and at the top of the head is a weight "to counter-" balance the occupant of the swing," provided with a screw stem and handle for adjustment. "The centres of support and oscilla-" tion" are formed "upon the knife edge and link or scale beam " principle." Short elastic springs are placed on each side between the head and the standard tops, and elastic ties between the lower parts of the chair and standards "for regulating the oscillation of " the seat."

Modifications.—The head and slings can be formed in "one " piece, or in several parts, and fitted together." When the tops of the standards are connected by a crosshead piece, the slings are formed "with an eye at each side through which the " crosshead passes;" or if there is not a crosshead, they may be hung "upon two short studs or pivots" fixed to the standards; again the studs may project from the slings and fit into recesses in the standards. Both standards and slings may carry studs with a vertical slot in each, and in each slot may be fixed "by a pin rivet " or screw a short length of flat steel hoop or spring;" or the slings may be connected in like manner to a crosshead piece. " The weight may be fixed upon or suspended from an arm or " arms projecting from the slings laterally at any desired angle," and the arms may be made "to elongate." The patentee proposes to obtain the motive power for giving the first impetus to his swing "from a coiled or other spring or weight operating " through a suitable train of ordinary wheelwork in connection " with a pendulum, pawl, and ratchet at the centre of oscillation."

[Printed, 8*d*. Drawing.]

A.D. 1862, November 29.—N° 3205.

VACHER, Francis.—(*Provisional protection only.*)—" Improve-" ments in ornamenting playing cards."

"This invention consists in certain improvements relating to " the ornamentation of playing cards, in order to give the edges " of the pack a rich and chaste appearance, in lieu of the plain " white edges at present exposed.

"I propose to take the packs of cards after they have been com-" pleted by the ordinary processes of manufacture to place them " in a suitable press, and to scrape their edges in order to produce " a smooth surface thereon, after which the edges are to be sized " and then glaired or treated with albumen, and covered with " gold or silver leaf, after which the surfaces are to be burnished.

"I also propose to apply bronzes in powder or leaf of any de-" sired color to the edges of the packs after the requisite adhesive " preparation. The edges may then be burnished. The bronze " may be of a variegated color or mixture.

"I also propose to ornament the edges of the cards by coloring " them in order to present an uniform body color or a variegated " or sprinkled surface, which may then be burnished in the ordi-" nary manner. Or the colors may be applied in stripes or sec-" tions so as to present a series of colors around the edges, if each " end and each side of the pack were colored in relatively corre-" sponding positions and widths of colors, they would when " packed always present the same appearance or register of stripe. " Or one or more sections or divisions may be covered with a " stripe of gold or silver leaf or bronze, or the sides and ends of " the packs may be gilt or silvered, or bronzed and colored " respectively as desired."

[Printed, 4*d*. No Drawings.]

A.D. 1862, December 20.—N° 3408.

NEWTON, Alfred Vincent.—(*A communication from Enoch Rice Morrison.*)—" Improvements in the manufacture of auto-" matic toy figures."

"This invention relates to the construction and peculiar arrange-" ment of double excentric cams, joints in connection with vertical " or upright levers and pedal supports, whereby through the " medium of suitable clock mechanism reciprocating and alter-" nating movements may be given to the pedal extremities of a " figure, and the figure will be propelled along by a stepping " movement." "The power is applied to the stepping mechanism " from a shaft of the clock movement, both ends of which shaft

" carry an excentric cam. These cams give the motion to the " walking or stepping mechanism, which consists of a boot or leg " and two vertical oscillating sliding levers. These parts are in " duplicate in a two-legged figure, and placed at opposite sides of " the mechanism. The levers have circular holes or openings " made in them at the knee or hip joint, in which openings the " cams are fitted so as to turn freely. These cams are so arranged " or placed on their shaft that they will partly lap over each other " and be in opposite positions with regard to the shaft, so that " the motion of the supporting lever, and the stepping or walking " lever to which the boot or leg is attached, are alternately changing " their positions. The boot or leg is retained in proper vertical " position so that it may always be brought down square or " horizontally on the floor, in consequence of being attached at " its lower end to the walking lever by a pivot, and having a vertical " slot in its upper end in which a pin attached excentrically " to the outer cam is fitted and works."

The drawing "represents the invention as applied to the propulsion " of a female figure."

[Printed, 8*d*. Drawing.]

A.D. 1862, December 24.—N° 3448.

NEWTON, ALFRED VINCENT.—(*A communication from William Henry Dutton.*)—(*Provisional protection only.*)—"An improved " construction of skate."

"The object of this invention is to obtain a skate which will not " tire or tax the muscles of the ankle and lower part of the leg of " the wearer, and which will not be liable to slip at any angle " that the foot of the skate may form with the surface of the ice.

"The invention consists in so constructing the runner of the " skate that it will form in its tranverse section a section of a " circle or a curve approximating thereto, and in providing the " runner with longitudinal blades or projecting edges to catch " into the ice and prevent lateral slipping.

"The invention further consists in applying to the skate a pawl " or hold-fast, arranged on a hinge joint, so as to offer no obstruction " to the progress of the skater, but to prevent a backward " movement of the skate on the ice."

[Printed, 4*d*. No Drawings.]

1863.

A.D. 1863, January 6.—N° 40.

MUNN, Joseph Alvin, and **COBB**, Jonathan Darwin.—(*A communication from John Bently Munn.*)— (*Provisional protection only.*)—" Improvements in automatic walking dolls and " other figures.

" The propelling power of these figures is obtained by the use " of a spring acting through gearing upon a horizontal cross shaft " near the bottom of the frame supporting the said gearing. This " shaft extends beyond the frame on both sides, and upon each " of its ends two excentrics or cams are fixed. For giving the " required movements to the pedal extremities and firm support " to the figures, two levers are employed upon each side, and are " respectively attached to an excentric by means of a sleeve or " ring, which is formed in the levers, and which fit loosely upon " the said excentric. These levers extend upward from the " excentrics, terminating in a slitted end, in which a guide pin " works, and downward to the bottom of the feet, giving thereto, when the gearing is put in motion, the desired reciprocating action. One of the levers upon each side is attached at " its lower end to a pivot fixed near the bottom of the foot. The " leg is kept steady by means of a guide pin fixed in the excentric, which gives the movements to the foot, the said pin working " in a guide way cut in the leg of the figure. The other upon " each side extends down inside of the leg, and operates independently in the foot, it being so arranged that it is not observed " while the figures are moving. The levers on each side have " alternating reciprocating movements, so that when the foot is " raised the other lever supports its respective side of the figure. " And the excentric or cams on one side are so arranged with " reference to those upon the other that one foot is raised while " the other is resting on the floor, giving at the same time firmness to the doll or figure, and the appearance of natural " walking."

[Printed, 4*d*. No Drawings.]

A.D. 1863, January 7.—N° 63.

BOUSFIELD, George Tomlinson.—(*A communication from Thomas Hope.*)—" Improvements in skate fasteners."

The forward foot rest is attached at its foremost end to the runner, and at its rear end to a post rising from the runner. A flexible loop or toe strap, fastened at its ends to the forward foot rest, receives the toe of the boot. "To the rear end of the runner " is attached a heel rest," "upon which slides longitudinally the " heel plate." From the forward edge of the heel rest a nut projects downwards; in the said nut works a screw attached to a "thumb wheel," to which is also attached another screw " that works in a nut" in the before-mentioned post. The screws "are " right and left-hand, so that as the thumb wheel is turned in one or other direction" the heel plate " shall be drawn towards or " thrown farther from the toe of the skate." A flexible heel strap is buttoned upon certain projections that extend upwards from the heel plate. "A bifurcated instep strap" is buttoned to both of the foot rests, and at its upper end is furnished with a buckle connected to it by a tongue or swivel and a rivet or pin, "which " goes transversely through the swivel and strap; this connection " of the buckle with the strap enables the former to adjust itself " under the strain of the tongue strap" "without deranging the " set or proper fitting of the instep strap." The instep strap being unbuckled, the toe of the boot is pressed into the toe strap, the skate is brought firmly against the sole (the boot heel being brought within the heel strap), the thumb wheel is revolved, and the instep straps are then buckled; finally, the thumb wheel is again revolved, setting all the said straps tighter on the foot.

[Printed, 1*s*. Drawings.]

A.D. 1863, January 26.—N° 230.

LIÉTOUT, Alfred Leonore, and ROISIN, Joseph Brigitte.—" Improvements in gymnastical apparatus."

"These improvements relate to an apparatus presenting in " a comparatively small compass the necessary requirements for " allowing to exert the principal muscles and moveable articula- " sions of the human body." "The apparatus consists chiefly " of a solid rectangular frame, which may be at pleasure either " firmly secured to the floor in the vertical position or rest on " legs in the horizontal one. In this frame a moveable panel, to " which a moveable arm or other chair may be fixed, is allowed " to glide up and down or forward and backward in suitable " grooves or slots, the panel being kept in equilibrium by means " of a counterweight or spring, handles being inserted in a fixed

" panel for allowing the person sitting on the chair to cause his " body and the chair either to ascend or to descend and perform " other gymnastical motions, counteracted by suitable springs " or other elastic bodies, and thus give proper exertion to the " principal muscles and moveable articulations of the body either " in the horizontal or in the vertical position, whilst rope or other " ladders or other gymnastical implements are applied to the " standards or uprights of the frame, and even a small apparatus " be added for exerting the muscles of the fingers and the hand, " which apparatus is arranged in a manner similar to a piano " keyboard, but with its keys counteracted by suitable springs."

The drawings represent the above-described apparatus fitted in a room. Apparatuses "for exerting the muscles of the fingers " and hands" are also shown; in one of these, the wrist is supported on a spring board, and the ends of the fingers are placed in thimbles, one set for pressure, the other for drawing on certain springs.

[Printed, 10*d*. Drawing.]

A.D. 1863, March 17.—N° 710.

BRIERLEY, John Henry, and GREENWOOD, Barzillai. — (*Provisional protection not allowed.*) — An "All England " cricketer's clasp."

" Hitherto in the manufacture of metal cricket clasps it has " been customary to emboss or form in the usual manner by " means of dies cut for the purpose what has been intended to " represent 'the Eleven of all England Cricketers,' or the 'All " 'England United Cricketers,' in groups differently arranged, " or a selection of one or more of these persons according to the " taste of the designer. We make use of the photographs of " any number of men selected from the present or any future " 'Eleven of All England Cricketers,' or 'United All England " 'Cricketers,' and group them together by means of photo- " graphy; or we take any photographic group of any number " of the Eleven of All England Cricketers, or the United All " England Cricketers, so reduced by means of photography as to " be of suitable size for insertion into a metal clasp for a cricket " belt, and then by means of certain special chemical solutions " so glaze or size the photograph that it becomes impervious to " or not affected by damp or rain. We afterwards insert the

" photographs into the metal clasps by means of metal frames,
" and thus produce metal cricket clasps, each one of which con-
" tains a photographic representation of one or more of the
" 'Eleven of All England Cricketers,' or the 'United All England
" 'Cricketers.' "

[Printed, 4*d*. No Drawings.]

A.D. 1863, March 17.—N° 715.

COX, John.—" Improvements in swimming baths, and in appa-
" ratus for swimming, part of which apparatus is applicable to
" sailing or moving vessels in a circle."

1st. The employment of a false bottom in swimming baths.—The false bottom is made of iron and wood; its specific gravity is very little more than water; it is used to enable swimmers to stand thereon and thus to prevent accidents from drowning. The said false bottom can be raised, as much as may be required, by means of pulleys.

2nd. Propelling apparatus for swimmers.—Ribs, having cloth fixed to them on the principle of an umbrella, are hinged to the lower end of a stilt, "the upper end of which is fastened to the 'leg by straps." Flaps of wood may be hinged to a flat surface, instead of using the cloth-covered ribs. No. 8802 (A.D. 1841), and No. 1974 (A.D. 1857), are referred to.

3rd. An "aquatic merry-go-round" consists of a ring of wood of a sufficient diameter with radii attached to a central pivot. A swimmer may, by swimming, pull this apparatus round, or by the application of power the apparatus may be made to pull the swimmer through the water. A rope, having a weight at its extremity, and passing over a drum, may be used to "drag " bathers through the water in a rectilinear direction;" this item is not mentioned in the Provisional Specification.

4th. "The employment of an annular boat or of ordinary boats
" connected with or forming part of an aquatic merry-go-round,
" whereby such boats are made to sail or move in a circle."

[Printed, 10*d*. Drawing.]

A.D. 1863, April 24.—N° 1014.

CAVANAH, John.—" An improvement in cricket bats."

" This invention consists in manufacturing a loose handle for *cricket bats,* and the joining of the same to the blade in con-

" junction with a spring." "The loose handle is secured to the " upper part or mouth of the blade of the bat by a hinge or knee " joint. Attached is a spiral or flat spring made of steel, india-" rubber, or any other suitable elastic substance fixed with metal " plates and sockets to the blade and handle; the object of this " spring is to prevent the concussion of the ball stinging or jar-" ring the hand when struck, as is the case with the ordinary " bats now in use.

" The spring may be applied or attached to such portion of the " blade or handle as may be found most desirable."

The drawings show a " metal cup secured to the blade with " screws or bolts. The cup contains the spiral" [helical?] " spring. Through the centre of the spring and cup is a screw " passing into the handle; this screw regulates the spring and " steadies the handle." One figure in the drawings shows " a " flat india-rubber spring passing through the blade, the handle " working in the same manner as herein-before described; when " this spring is applied, no other spring is attached to the blade." A screw pin passes through the blade and the lower part of the handle, its head appearing at the side of the bat; the said screw pin forms the joint.

[Printed, 6*d*. Drawing.]

A.D. 1863, May 6.—N° 1129.

GEDGE, William Edward.—(*A communication from Paul Bonfils.*)—(*Provisional protection only.*)—"An improved toy."

" This improved toy is composed of a pistol which discharges " or launches a top, and of the top itself. A small toothed wheel " supported on an axle passing in the end of the pistol barrel, a " string rolling round the axle and attached by the other end to " a spring inside the pistol, and a small rod (answering to the " ramrod of a pistol), one end of which takes into the teeth of the " small wheel, the other being attached to the trigger of the pistol, " constitute the main features of this invention.

" The top itself has a special arrangement; its stem carries a " pin which fits into the axle of the small toothed wheel of the " pistol, the said axle being hollow and terminating in a spiral " form."

[Printed, 4*d*. No Drawings.]

A.D. 1863, May 8.—Nº 1158.

BIELEFELD, CHARLES FREDERICK.—" Improvements in the " manufacture of sheets, slabs, and other articles, when fibrous " materials are employed."

Woven or other suitable fabric may be saturated with a compound containing water glass, clay, and lime, with or without metallic oxides and paper pulp. Thick boards may be made by pouring a mixture similar to the above (in a very fluid state) " into frames according to the thickness required."

" In some cases when making sheets, I use unsized paper, or " felt, or woven fabric. I place them in a vessel in which is a " mixture composed of 1 part china clay and 1 part oxide of " zinc combined with a solution of water glass, until the china " clay and oxide of zinc are in a liquid state and well mixed. " The unsized paper or felt is to be immersed in this solution, " and remain until thoroughly saturated; the sheets may then " be placed together to obtain any desired thickness. These " sheets are applicable to a great variety of purposes, amongst " others, to the construction of billiard and bagatelle beds."

[Printed, 4*d*. No Drawings.]

A.D. 1863, June 8.—Nº 1419.

GEDGE, WILLIAM EDWARD.—(*A communication from Joseph Louis Horsin.*)—" Improvements in the construction of kites."

" This improved kite is composed of a jointed carcase or skeleton," " formed of small ribs of wood united together by means " of small riveted bolts," " which permit them to fold one on the " other like a folding or pocket rule. These small ribs when " united form six principal parts of the skeleton, starting from a " common centre," " and radiating or spreading so as to consolidate the different parts of the cloth or covering of the kite. " This carcase or skeleton may also be made of metal, whalebone, " or other suitable material. The free or loose ends of the rays " or arms of the skeleton are slightly notched to permit the cloth " or covering of the kite to be fixed to them. This covering may " be of any material which may be found suitable, and be fixed to " the skeleton by small cords or strings attached to it, or by " small loops or bands of india-rubber or other elastic material. " When the kite is to be used unfold and spread out the arms

" of the skeleton," "and pass them through the loops or bands " of the covering, or lay the skeleton on the cloth or covering " (unfolded and spread out), and fasten them together by strings " passing in the notches of the arms or ribs round the centre and " elsewhere if great solidity is desired. When the kite is no " longer in use untie the cloth or covering from the skeleton, " fold the arms or ribs of the skleton one on the other, wrap the " cloth round the folded skeleton, and it may be placed with the " tail (which should be provided with a little bag to contain " ballast) in a bag, which, even if the kite be of large size may " be conveniently carried in the pocket."

[Printed, 8*d*. Drawing.]

A.D. 1863, June 15.—N° 1493.

COPE, Thomas.—(*A communication from William Hignett.*)—(*Provisional protection only.*)—" Improvements in the construction " of rocking horses, and in giving additional motion thereto."

" This invention consists in an improved system of connecting " a toy horse to axles and wheels for the purpose of enabling " it to have locomotion, and rise up and down, similar to the " natural motion of the living horse when galloping. Each of " the fore legs of the toy horse is jointed at the shoulders to the " body, and at the feet to cranks on a cranked axle, having a " wheel at each end, and the hind legs are jointed to studs or pins " on a frame open at that end, and holding at each side a swivel " plate in such manner that both can swivel in the frame. To " the swivel plates is fixed a short axle carrying a wheel which " can swivel with the plates and be used as a guiding wheel. The " other end of the frame is jointed to the cranked axle, and " mounted with a cross bar used as stirrups by the rider and for " giving impetus to the wheels. In the mouth of the horse there " is a swivel bit connected at each side with a rein, and also by a " wire with the swivel plate on its opposite side, so that when " one rein is pulled the guiding wheel moves sideways in one " direction, and when the other rein is pulled, in the opposite " direction."

[Printed, 4*d*. No Drawings.]

A.D. 1863, June 18.—N° 1525.

GANNE, Jules Louis.—" Improvements in toy pistols."

" These improvements relate principally to a toy pistol, the

" barrel of which is moveable, and is, when the pistol is in the
" uncocked state, partly concealed in a fixed butt-end, thus con-
" siderably reducing the length of the pistol, and bringing the
" same within such compass as to be easily carried in the pocket
" by a child as an ordinary plaything."

A moveable barrel may be pushed backward or forward in the interior of the barrel that is fixed to the stock, A central spindle is fixed in the breech of the fixed barrel and passes through a washer that is capable of longitudinal motion in the said fixed barrel; another washer is fixed towards the free end of the spindle in the moveable barrel, and between both washers a "spiral" [helical?] spring, inserted in the moveable barrel, is curled round the spindle, which spring, when the moveable barrel is pushed forward, becomes bent and is kept in this position by means of the upper part of the trigger acting as a stop, a small blade spring being fixed to the stock for the purpose of keeping the trigger in the requisite position. On pulling the trigger the helical spring relaxes, the moveable barrel is carried towards the stock, and a plug at the muzzle of the moveable barrel strikes against a percussion cap provided at the free end of the spindle. To fix the cap on the end of the spindle, the plug is made to turn out of the way upon a pin or pivot.

[Printed, 10*d*. Drawings.]

A.D. 1863, July 31.—N° 1896.

ANDREUX, JEAN BAPTISTE.—(*Provisional protection only.*)—
" Improvements in the application of steam to toy boats or other
" similar toys where steam can be employed as a motive power."

" In the centre of the boat, which can be made of any size or
" form, is a tower similar to that of the American ship Minotaur,
" having a moveable top to allow of lighting a small stove or
" spirit lamp, as the case may be, which is placed at the bottom
" of, and in the interior of the tower; immediately above this
" lamp, but at a sufficient distance to allow the wick of the lamp
" to burn in such a manner as to throw out as much heat as
" possible, is placed a boiler, at the stern of which is fixed a small
" and very narrow pipe in order to give the steam (by which it
" makes its exit) greater force; this pipe corresponds with another
" in the interior of the boat and abutting at the rudder.

" *The force of* the concussion of the steam on its exit with the

" water causes the boat to be driven forward, and thus imparts to " it the necessary motion."

[Printed, 4*d*. No Drawings.]

A.D. 1863, August 1.—N° 1907.

BRADSHAW, THOMAS.—(*Provisional protection only.*)—" Certain improvements in machinery or apparatus for giving motion " to 'dobby horses,' 'flying and swinging boats,' or similar " apparatus used for public amusement."

This invention consists in the employment of a steam engine to actuate the said apparatus; also in the method of applying the said steam engine to the said purposes.

" The main central pillar supporting the framework and " 'horses' is constituted at its foundation of an ordinary vertical " steam boiler; from the upper surface of this boiler a flue projects, forming the second or top portion of the supporting pillar, " around the periphery of which are secured broad flanges for the " purpose of supporting the rods or arms from which the horses " are suspended or attached; these rods are connected together, " and are caused to bear upon the surface of the flue or central " pillar, around which they revolve upon bowls or pulleys, one " set of bowls bearing upon the afore-mentioned flange in a vertical position, and the other set pressing and bearing upon the " exterior surface of the pillar or flue, a revolving motion around " such central pillar being given to the rods or arms supporting " the 'horses' by means of a vertical shaft supplied with an " adjustable compensating pinion gearing into a wheel secured to " and driving the rods bearing upon the central pillar; this vertical rod or driving shaft obtains motion through the medium " of bevil gearing in connection with a small engine fixed in a " convenient position upon the said vertical boiler, and by such " or similar combination of mechanism steam power may be " applied to flying or swinging boats."

[Printed, 4*d*. No Drawings.]

A.D. 1863, August 7.—N° 1957.

GUILLOD, THOMAS WALKER.—" Improvements in the manufacture of chess boards and chess men."

" This invention "consists in forming chess men flat and of " considerable width as compared with their thickness." " Each

" man is formed with a projecting tongue at its foot of a proper " form to enter freely into a slot" "made in each square of a " chess board." "The two flat and widest sides of each man " will, when the man is in its place on a square of the chess " board, of necessity be placed opposite the two players." To hold the men more securely, a lip of vulcanized india-rubber is placed around each slot; the tongue being notched at the root, the india-rubber springs back into the notch and retains the tongue, "even should the board be turned upside down."

" The chess board is made to fold in two parts, which are " hollow, so that when folded there is an enclosed space between " the two parts, as is the case in respect to some chess boards " as at present made, but for chess men constructed as above " described, the space is only required to be equal to the thickness of two of the flat chess men when placed flat one on the " other, and the interior of the board is divided by ridges to form " cells for the flat chess men. When the men are packed in the " recesses, and the two parts of the chess board folded together, " the board and men will occupy a comparatively small space."

The drawings show a board preferably made of papier mâché or millboard. Each socket or slot has "placed around it a lip of " vulcanized india-rubber that is to enter a recess formed in the " tongue of each chess man;" this the inventor does (by preference) "by cementing over the upper surface of the board a sheet " of vulcanized india-rubber that is on its upper surface divided " into squares in the manner requisite for a chess board."

[Printed, 10*d*. Drawing.]

A.D. 1863, August 29.—N° 2131.

PENNELL, Henry Cholmondeley.—" Improvements in the " construction of skates."

The skate which is the subject of this invention is constructed " with a double instead of a single iron, or rather with a single " piece of iron formed into or with a double edge. The iron may " be described as consisting of a hollow square tube or piece, one " side being removed and the two parallel edges thus left being " downwards on the ice when the skate is in use. The upper " part of the piece forms foundation for the foot or sole plate, " straps, and heel plate, for placing which latter the tube is cut " so that the heel plate is somewhat below the level of the plate

" which supports the ball of the foot." "The heel peg which " holds the heel of the boot passes through the heel plate between " the parallel irons slightly projecting beyond the edges of the " skate blade or iron that it may serve as a check or stop should " the skater throw his or her weight backwards, and this combined " heel plate may be affixed to the ordinary skate and one or more " pegs be used."

The drawings represent this skate with a strap attached to the heel plate, and a band to lace attached to the sole plate.

[Printed, 6*d*. Drawing.]

A.D. 1863, September 16.—N° 2267.

COX, John.—" Improvements in swings."

1st. See-saw swings.—"Tubes, girders, braces, trusses, and " suspending rods are employed to make a strong structure." These swings are loaded with a considerable weight beneath the axle, and may be worked by giving motion to a load or weight placed upon the swing. At each end of the swing a tube is made to dip into water, or the end of the swing may strike a floating object at the end of each oscillation, and thus the shock may be diminished. One end of a see-saw may be weighted and shorter than the opposite end, so that persons may describe half a circle in the air above the axle. These see-saws may be constructed on a very large scale.

A series of loaded see-saws may be placed in juxtaposition, so that they may be self-regulating for " trapeze exercise."

2nd. Pendulum swings.—Several pendulums are combined " so " that a seat or frame may oscillate in a horizontal position owing " to the pendulum or suspenders acting in a parallel manner " with each other, one at least being in advance of the other in " the line of motion." "The occupants are enabled to propel " themselves by ropes, rods, or their feet, or by paddles, if above " water."

" Trapeze exercise " may be performed by a combination of pendulum swings, in which the arms are prolonged above the axle to receive a weight on a cross bar between the arms.

To afford facility of propulsion, the pendulums may be suspended from the same axle at an angle to each other.

3rd. " Merry-go-round swings."—The swingers sit astride an outer rim and may propel themselves with their feet; or seats may be fitted on these swings so that oars or poles may be used against water or pegs.

[Printed, 1*s*. 4*d*. Drawings.]

A.D. 1863, October 8.—Nº 2466.

CANOUIL, Germain, and BLANCHON, François Armand.—(*Provisional protection only.*) — "Shooting toy fusees, toy "rockets, or other similar toy missiles by means of toy pistols or "other toy fire-arms."

"For this purpose we manufacture toy fusees or toy rockets "from a long wooden match, a paper rolled spirally" [helically ?] "into a sort of fusee or any other light material of suitable "form, and we dip them in, or give them a coating of any suitable "firework composition in such manner as to allow by means of "the explosion of a percussion cap, a paper amorce, or other "suitable medium provided with a fulminating composition, not "only fire to the toy fusee, rocket, or other similar missile, but "also throw the same forward at the required distance, for which "purpose the toy pistol or other toy fire-arm is arranged in such "manner as to allow of the toy fusee and fulminating com-"position to be applied to it, and obtain by percussion or friction "the explosion of the fulminating composition, and thus set "fire to the toy fusee, rocket, or other similar missile, and throw "the same forth at the required distance."

[Printed, 4*d*. No Drawings.]

A.D. 1863, October 30.—Nº 2679.

NORMANDY, Alphonse René Le Mire.—"Improvements "in the manufacture of playing cards."

"These improvements consist in putting visibly in one, two, or "more of the front corners of playing cards ordinary Arabic or "Roman numbers, or some other distinctive mark or sign, "whereby the value or character of the card can be easily "ascertained."

"In order that a person having in his hand a number of cards "may more readily see the value of each card without separating "more than the corners of each playing card of a pack of the "ordinary description, consisting of spades, clubs, diamonds, "and hearts, has a figure or number or sign at one or more of "*its corners indicating* its valve [value ?], "for instance, the 4

" or 5 or 9 or other number of spades, or of clubs, or of diamonds, " or of hearts, and in the case of the ace, 2, or 3, in addition to " the numeral or word denoting the value; word or other sign to " indicate spades, clubs, diamonds or hearts is added in like " manner; one or more of the corners of each court card is " marked with the word king, or queen, or knave, or other sign " indicating king, queen, or knave, together with a spade or club " or diamond or heart. By these means a player, by simply " opening out the corners of the cards in his hand, will be able " to know at a glance the nature and value of each card, although " the greater part of each card is covered or hid by the other " cards."

[Printed, 4*d*. No Drawings.]

A.D. 1863, December 15.—N° 3163.

OBERT, VICTOR.—(*Provisional protection only.*)—" A new toy, " being a mechanical wooden horse."

"The toy, the subject of my invention, consists of a wooden " horse placed on any sort of carriage or vehicle, which horse " gallops directly the carriage is set in motion. To produce this " gallop the axle or shaft of the hind wheels is cranked, and set " fast in the said wheels; the hind feet of the horse are fixed to " this crank shaft, and consequently follow the rotation of the " wheels. A support, which takes the horse under the saddle " part, is hinged to a second crank shaft set in motion by the " driving shaft above mentioned.

"This arrangement is applicable to any vehicle drawn by any " power with one or several horses abreast, with or without " carriage behind them, and the horses may gallop at a regular " or irregular pace, according to the combination given to the " driving shaft, of which the crank may be double, and in inverse " direction."

[Printed, 4*d*. No Drawings.]

A.D. 1863, December 30.—N° 3300.

LENGELÉE, AUGUSTE CHARLES JOSEPH, **MOREL**, FRANÇOIS PHILIPPE, and **COQUET**, DESIRÉ GEORGE MATHIEU.—(*Provisional protection only.*)—" Improved toys."

"The invention relates to a new description of toys imitating " a bird, and the same consists in forming, by means of thin

" vulcanized india-rubber, a very light closed bag or pouch, the " shape of which is to correspond as nearly as possible with that " of the bird to be imitated, which bag or pouch is to be inflated " either with atmospheric air or with any suitable gas of less " specific gravity than this latter. The bag or pouch may be " coloured, stained or painted to imitate the bird's plumage, or " even feathers, paper, goldbeaters' skin, or other light materials " of suitable form and colour, or painted, be adapted to the bag " for imitating the plumage, wings, tail, bill, or other parts of " the bird, the parts imitating the wings being by preference " attached to the bag in such manner as to imitate when moving " the flapping of birds' wings, or the wings may simply be " painted on the outside of the bag. If intended to be filled " with air, the bag or pouch is provided with a small tube or " orifice for insufflating air in the bag, and, if wished, also with " a small whistle actuated by the air escaping from the bag, " whereas if this latter is to be filled with hydrogen or other gas " of less specific gravity than the atmospheric air, the bag must " be kept captive by a string or other suitable means."

"The invention allows of imitating any description of birds " with a more or less long neck, bill, eyes, feet, tail, plumage, " and fixed or flapping wings, thus forming a new description of " toys."

[Printed, 4*d*. No Drawings.]

1864.

A.D. 1864, January 9.—N° 61.

BROWN-WESTHEAD, MARCUS. — (*A communication from Thomas Noe Crow and James Noe Crow.*)—" Improvements in " dancing toys."

" This invention consists in combining with a spring board or " other device (such for example as a drum head) to which a " vibratory motion can be imparted a human or other figure " with jointed limbs, in such a manner that by holding the feet " of the figure in close proximity to the surface of the board, " and imparting to the spring board or its equivalent a vibrating

" motion, the figure will begin to dance in the most ludicrous " and comical manner. The legs and arms, and it may be the " head of the doll, must be so attached by pivots to the body as " to be perfectly free to move independently when the doll is " subjected to vibration. To the back of the jointed figure an " elastic rod is attached fitted with a handle for supporting the " figure. To set the figure in action it is only necessary to hold " it by the elastic rod in contact with the spring board and to set " the board vibrating by tapping with the finger. The doll will " then make the most fantastic movements with its limbs. To " give variety to the toy it may be convenient to make the head " detachable so that one comic head may be substituted for " another at pleasure."

The drawing represents the invention applied to the figure of a negro.

"These toys may be of life size if desired, and as ballet girls or " other figures may be made to dance on a public stage, in which " case the board or other springing part may be caused to vibrate " by a steam engine or other motive power."

[Printed, 6*d*. Drawing.]

A.D. 1864, January 13.—N° 99.

HANLON, WILLIAM, HANLON, GEORGE, HANLON, THOMAS, and HANLON, ALFRED. — "Improvements in " gymnastic apparatus particularly applicable to in-door exer- " cise."

The object of this invention is "to include in one apparatus " all the ordinary appliances used for this exercise, instead of " distributing them in different places, as at present; and also " to make the said apparatus portable and adaptable for use in " private dwellings."

Two uprights are fixed at the centres of two opposite sides of " a square or oblong square wooden frame or foundation." The said uprights are connected at the top by a cross bar, behind which are ladders set at an incline and connected at the top by another ladder in a horizontal position. Parallel bars are provided, which may be removed when the horizontal bar is required for exercise. A trapeze bar is suspended from the horizontal ladder. "A rack " and peg pole for 'hand-over-hand' exercise is inserted in the floor of the apparatus, and secured to the back of the horizontal ladder. The entire apparatus is strengthened by oblique tie rods, which are "capable of detachment to suit various "descriptions of exercise." The floor is divided into two or more portions connected by joints or hinges, "and the whole is "mounted on castors."

In the Provisional Specification, "a pulling machine," "light "'dummy' dumb bells" attached to weighted ropes, and "Indian clubs," are also described. The latter are hollow, and contain a weight working on a screw; by this arrangement the weight may be brought nearer to or farther from the handle of the club.

[Printed, 8*d*. Drawing.]

A.D. 1864, January 25.—Nº 212.

VAILE, Samuel.—"Improvements in tables."

The object of this invention "is the construction of a dining "or other table so as to contain within itself a billiard, bagatelle, "or other game table, or two or more game tables."

When only one game table is to be combined as above, it is fitted "so as to slide clear inside the frame" of the dining table, then it is elevated and levelled by means of screws and guides. The table may be constructed for two games, "so that it may be "lifted out and turned over, the second game being played on "the under side of the table." In a plan for two or more than two games, a similar table or tables is or are placed on the top of the lower sliding table. For croquet, a permanent bottom to a dining table may be used.

The said gaming table may be lifted out of the dining table, and (by means of "movable adjusting legs") used separately and independently of the said dining table.

"The game tables when not required for use are covered with "a movable leaf or leaves, which forms the top of the dining "or other table. The dining table may be made to expand by "additional leaves in the ordinary manner."

The drawings show tables of the above description that are elevated and lowered by means of band gearing. A "screw and "guide elevator" arrangement, in which there are cross heads and bearers, may also be used to elevate and lower the said game tables. Another arrangement consists of worm and toothed wheel gearing.

[Printed, 1*s*. 4*d*. Drawings.]

A.D. 1864, February 16.—N° 401.

DEAVIN, John, DEAVIN, Martin, and SUTTON, John Henry.—"An improved method of obtaining oscillating or " swinging motion in swings, cradles, cots, and other like " articles."

"We connect to metal or wooden uprights, which carry at their " lower ends the swing, cradle, or other like article, two cross " beams, one on each upright, and at or near the upper ends " thereof. These cross beams extend both from the front and " from the back of the uprights; the uprights are suspended on " axes, and above these axes we fit pulleys. We connect cords " at or to the fore ends of the cross beams, and other cords at " or to the rear ends of the cross beams, carry them over the " pulleys, and bring the free ends down within reach of the " occupants of the swing; by pulling alternately upon these " cords the occupants of the swing obtain the swinging motion. " For cradles for infants and others unable to pull the cords, we " apply clockwork to obtain the swinging or pendulum motion."

The drawings show a swing actuated by pulling upon cords, as described above; they also show a swing, in which the swinging motion is obtained "by means of clockwork." A slot, in the top of either or both of the uprights, receives a crank, one end of which projects beyond the side of the frame, and carries a pulley, over which a chain, to which a weight is attached, is passed; the chain is connected to clockwork. When it is desired to impart oscillating motion to the cradle or other article, the chain is wound up to raise the weight to the pulley; "then by " allowing the weight to descend, the running out of the chain " will impart rotary motion" to the pulley and crank, and the uprights and the cradle will receive oscillating motion. If preferred, a spring may be used as a motive power instead of a chain and descending weight.

[Printed, 1s. 4d. Drawings.]

A.D. 1864, March 14.—N° 649.

BROADBRIDGE, Charles Richard.—"Improvements in " adapting occasional dining and other tables to the purposes of " playing games."

These improvements relate to the adaptation of the said tables to playing billiards. The invention "consists in a particular

" mode of fitting thereto the cushions and parts to be raised " above the surface, and the further fitting a drawer, with " arrangements, which shall be capable of containing the cues, " balls, marking board, and other appurtenances of a billiard or " other table for games."

The surface of the table is made " of slate, covered with green " cloth, as usual." The cushions are attached " by hinges, so " that they can be raised or lowered by simply turning them on " their hinges;" " when the cushions are down they pass and " hang under the edge, and within the limits of the table top." " The metal fittings of the pockets are received in suitable " sockets, and simply required to be dropped or screwed into " position, the pockets being attached to the metal fittings. " Buttons or other fixings are applied to keep the cushions in " position when folded down."

" When the table is required for play, it is simply necessary to " turn up the cushions on their hinges, and fasten and secure " them by the metal bands of the pockets that drop into sockets, " as before explained."

" In order to level the table," each of the legs is furnished " with a screw or screws (right and left hand), which can be " readily turned, and the table thereby adjusted."

[Printed, 10*d*. Drawing.]

A.D. 1864, March 19.—N° 703.

RIBOULET, PIERRE JOSEPH, and LAPELOUZE, CÆSAR.—(*Provisional protection only*.)—" Improvements in apparatus " for maintaining in a horizontal plane tables, beds, sofas, pianos, " billiard tables, and other articles on ship-board."

This invention " consists in the employment of a ball or pivot " and socket, for the purpose of supporting the object desired to " be maintained in a horizontal plane."

" When supporting a table according to this invention the ball " is supported by a strong upright from the deck, and the socket " or brasses embracing the ball or pivot are secured to a strong " framework, the top of which is immediately under the top of " the table, whilst the legs of the table rest upon and are sup- " ported by a ledge or rail forming part of the framework to which " the socket is fixed. This framework is also arranged to carry " seats for the sitting at the table, by which means the table, seats,

" and persons sitting thereon will not partake of the movements
" of the vessel, but will always be maintained in the same plane.
" Feet turning upon centres of motion beneath the framework
" carrying the socket are arranged in such manner that they may
" be let down and support the framework when it is not desired
" that the table should partake of the movements of the vessel,
" and to prevent motion thereto whilst persons are taking their
" seats at the table."

The application of this invention to beds is also described in detail.

[Printed, 4*d*. No Drawings.]

A.D. 1864, April 25.—N° 1044.

HARRIS, Daniel.—" Improvements in the construction of " metallic and slate billiard tables."

These improvements are:—

" The application of elastic steel springs or wires to the india-" rubber cushions.

" The fastening these cushions to the frame by screws," the gilt or otherwise finished heads of which project beyond the frame.

" The use of metallic girders terminating in dovetails, and fitted " with vertical adjusting screws in the dovetails and the centre " of the girders.

" The use of metallic girders terminating in dovetails, with " adjusting screws in the dovetails and centre, and having a ten-" sion bar or bars on which the girder is cast, or to which the " tension bar or bars are subsequently fitted and secured by " screws, rivets or otherwise."

At the ends of the tables are dovetails with adjusting screws.

" The application of these metallic girders with or without ten-" sion bar or bars to metallic and slate tables and to metallic " and timber frames.

" The use of screws working vertically in the centre and ends " of the girders and in the flange at the bottom of the female " dovetails fitted to or cast on the ends of the frames to adjust " the tables, and the use of a piece of metal between the top of " these screws and the lower surface of the tables."

Tubular or cellular ribs are " cast on the lower surface of the " metallic tables."

[Printed, 4*d*. No Drawings.]

A.D. 1864, April 28.—N° 1072.

GHISLIN, Thomas Goulston.—" Improvements in the treat-" ment and application of seaweed."

This invention consists in combining seaweed " with various " gummy, resinous, bituminous, fatty, gelatinous, and earthy " matters and fibrous substances," " so as to produce mixtures " capable of solidifying and of becoming impervious to the " action of moisture, heat, and acids." The compound thus formed is called " algæite."

Amongst other applications, " algæite " may be " applied in a " solid or plastic state " to the construction of billiard and bagatelle balls and toys.

The seaweed is treated in the manner described in No. 2035 (A.D. 1862); the vegetable matters are then dried and reduced to an impalpable powder, " or if operated upon in a wet state they " will be reduced to a paste." Amongst the earthy substances used to incorporate with the said powder or paste, are the silicates of potash and soda. In practice, the inventor finds it " con-" venient in using the liquid silicates to make the liquid hot, " and then to incorporate with the silicate as much of the pre-" pared seaweed and other ingredients as will amalgamate there-" with; the plastic mass is then fit for moulding, stamping " embossing, or otherwise treating to give to it its intended " form." In using the silicates in the dry state, the seaweed is mixed with the silicate, and hot water is added. This compound may be further hardened by steeping it in oil, gum, resin, or varnish. When elasticity is required in the substance, india-rubber is added to the other ingredients, and the whole mass is mixed thoroughly in a masticator.

[Printed, 4*d*. No Drawings.]

A.D. 1864, May 10.—N° 1182.

DREYFOUS, Samuel.—" Improvements in air canes or pea " shooters."

" The invention consists in an improved arrangement of air " cane or pea-shooter, the principal object of which is to allow " the shooter, whilst blowing forth the pea or other projectile, " to take aim with greater precision and facility than with those " now in use. The cane or barrel, which I prefer to be made of " iron or other suitable metal, is mounted on a stock in the

" manner of a fowling piece, musket, or other portable fire-arm, " one end of an india-rubber or other suitable elastic tube is " connected to the back end of the bore of the barrel of the cane, " or to a tubular perforation provided in the butt end of the " stock, and communicating with the said bore. For firing, the " shooter takes in his mouth the other end of the said elastic " tube in which he blows whilst taking aim as with an ordinary " fowling piece. The barrel is moveable in the stock, and its " back end fits into a sort of breech, so that by pushing forward " the barrel the breech is opened so as to allow of inserting " therein the pea, clay ball, or other similar projectile, after which " the breech is shut by pushing back the barrel."

The drawings represent the arrangements of the said air canes in the shape of a rifle or gun, and of a pistol. "The same " arrangements might be applied also to toy cannons, in which " case the flexible tube" "might serve as well for shooting as " for dragging along the cannon on its carriage."

[Printed, 8*d*. Drawing.]

A.D. 1864, June 27.—N° 1613.

NEWTON, William Edward.—(*A communication from Joseph Antoine Emile Chazelles.*)—(*Provisional protection only.*)—" Improvements in apparatus for blowing bubbles from soapsuds or " other liquids to amuse children, and for other purposes such as " perfuming the atmosphere of apartments."

" A metallic case of cylindrical or other form is employed to " contain the liquid, and to this case is attached a small cylinder " surmounted by a cup. At the bottom of this cylinder is a disc " or plate, which serves as a cover to the metallic case, and to " which it may be soldered. This cylinder also carries a button " or projection, to which is attached a flexible tube. A vertical " hole is made through the cylinder, and a transverse hole through " the button. The vertical hole which passes through the cylin- " der is prolonged in the form of a tube until it reaches nearly to " the bottom of the metallic case. The bottom of the case is " formed by a piece of india-rubber stretched across an iron ring, " which fits tightly into the case, and thus hermetically seals it.

" The operation is as follows:—The case being full of the " liquid, a gentle pressure is exerted on the india-rubber bottom, " which forces a small quantity of liquid up the tube into the

" cup; air is then blown through the flexible india-rubber pipe, " which causes the bubble to be made."

" In order to perfume apartments, it is only necessary to add a " small quantity of perfume to the soapsuds or other liquids that " may be employed for the purpose of making bubbles."

[Printed, 4*d*. No Drawings.]

A.D. 1864, July 25.—N° 1846.

WHITE, James Chadnor.—" An improved apparatus for " holding whips and other articles."

This apparatus may be applied to billiard cues.

The invention " consists of a plate of metal of any suitable " material of sufficient size, with conveniences for fixing it to any " convenient place, to which plate india-rubber, leather, gutta " percha or other suitable elastic material is directly or indirectly " attached projecting so that two ends, edges, or parts of the " india-rubber, leather, gutta percha, or other suitable elastic " material meet together, or nearly so, in such a way that a whip " or any other article being placed between the said two ends, " edges, or parts, will be held or supported. The india-rubber, " leather, gutta percha, or other suitable elastic material may, for " instance, be in two pieces projecting from the said plate at an " angle, and held in position by two slotted pieces also projecting " at an angle from the said plate at any suitable distance apart."

In one instance of this invention, applicable to billiard cues, whips, &c., the two edges of elastic material are brought together by a spring behind the metal plate. The article inserted between the leather edges " is maintained in position by means of the " spring," which clasps two studs on the projecting pieces or holders.

In another modification of the invention, " specially adapted " for holding billiard cues and such like articles," the holding edges are cut in a piece of circular india-rubber mounted between two discs of wood and supported by a stand. Holes in the said piece of india-rubber receive the article to be held.

Other examples, and further details of the invention are given.

[Printed, 8*d*. Drawing.]

A.D. 1864, July 30.—N° 1894.

McEVOY, Henry.—" Improvements in the apparatus or articles " *used in the game of* croquêt."

Tallies or indicators are applied to each hoop, the said indicators showing the progress of the player's balls through the hoops, and corresponding in number and colour with the mallets and balls used in the game. The hoops are prepared to receive the indicators "by giving one portion of the top part of them a hori-" zontal shape." The indicators are attached by an eye to the horizontal shape or bar, so as to be in a row, and they are capable of being turned round separately on the bar, so that, in one position, their coloured faces may be obscured by a white band of thin sheet iron, which is firmly fixed across from one leg to the other of the hoop. To indicate that a given ball has passed through a hoop, a corresponding coloured tally is turned round on the bar, so as to show its colour on the opposite side of the above-mentioned band.

Indicators may also be attached to hoops by forming contractions at the top and bottom of them; the said contractions may be inserted into corresponding holes made in two bars fixed at a suitable distance from each other and from the top part of the hoop. In this case, as each player passes his ball through a hoop, he turns the corresponding indicator "in a lateral direction."

According to another plan, the indicators may be pendent on a bar, so as to be removable at pleasure.

Another improvement "consists in forming a shoulder on each " side of the hoops," so as to enable them to be driven into the ground with facility.

[Printed, 8*d*. Drawing.]

A.D. 1864, August 4.—N° 1944.

LONG, Alfred.—" Means or apparatus to facilitate the acquisi-" tion of languages, applicable also to obtaining various changes " in musical combinations, and to other purposes of education, " utility, amusement, or diversion."

The object of this invention is (in respect to languages) to effect various changes in the combination of words, so as by variety in the combination of a limited number of words "to " obtain familiarity with a large number of expressions in a " language."

" Metabolical apparatus " are " so constructed as to present to " the eye a series of interchangeable surfaces marked with or " carrying words, notes, or signs." A sentence is cut up into parts, and a series of equivalents is capable of being used in substitution for each part. The separate words are applied to "surfaces which are capable of being brought into a line." Only the words for the time required to form a sentence should be present to the eye.

A quadrangular chamber has horizontal and vertical partitions, affording sets of compartments, each of which is adapted to receive a block, with four available faces, each face bearing a word. "The separate rows of blocks may form one continuous sentence, or separate and independent sentences." The indications on the blocks are viewed through a slip of glass, and rotation can be given to the chambers so as to expose fresh faces of the blocks.

The game of "prefixes," also the game of "birds," and of "figures," played with the above-described apparatus, are set forth at length, as well as many other applications of the invention.

[Printed, 1s. Drawing.]

A.D. 1864, August 9.—Nº 1982.

CLARK, William.—(*A communication from Alexandre Marie Quinet, and Achille Baudouin.*)—"Improvements in the manufacture of india-rubber balls and other elastic recipients, and in the valves applied to the same."

The points of this invention that apply to the present series are:—

For closing india-rubber balls, the application of self-acting internal valves which are closed by the pressure of the contained air; the same opening affords the means of filling and emptying the said balls.

The said valves are composed of a base of india-rubber "of greater or less thickness perforated at the centre, and furnished with a tongue piece, also of india-rubber, which is caused to adhere to the internal face of said base piece for a portion only of its surface, the remaining part forming a valve, closing the orifice before mentioned." The valve is vulcanized at the same time as the ball, "and so unites the whole together." The valve may consist only of a single tongue applied on the inside of an orifice in the ball.

The inflation or emptying of the said balls may be made "by means of a small hollow mouth tube," with or without ball and valve, the said ball and valve acting to inject the air.

Designs are obtained by the introduction of intermediate metallic linings into the moulds of the balls. The said linings have "the designs formed on their concave surface, either hollow "or in relief;" sulphurets from the said metallic linings act on the vulcanized india-rubber to produce geographical and other designs.

[Printed, 8*d*. Drawing.]

A.D. 1864, August 15.—N° 2030.

BROOMAN, Richard Archibald.—(*A communication from Charles Edmond François Couturier.*)—(*Provisional protection only.*)—"An improved aerostatic machine."

"This machine may be used for travelling through the air, or "as a toy. It is composed of a hollow body, with extending "arms concave below, and with a horizontal tail concave above. "It carries a screw when used as a toy."

"When used for travelling through the air the body is in the "form of a basket for containing the aeronaut; the arms are "fixed for a distance from the body and terminate in wings or "flappers. Springs are fitted at the connection of the wings and "arms, and by means of cords the aeronaut works the flappers, "and may progress even against the wind."

"When as a toy, the body is in the shape of a bird, and the "arms and wings are fixtures; and extending upwards from the "body is a rod, which carries a screw movable upon the rod; "the air causes the rotation of the screw, and carries along the "toy."

[Printed, 4*d*. No Drawings.]

A.D. 1864, December 5.—N° 3019.

HASELTINE, George.—(*A communication from Myron Perry.*) —"An improved combined infant tender and exercising apparatus."

In one apparatus, "a quadrilateral framework is secured at the "bottom ends to a suitable seat, and at the top to a canopy, the "child being secured from falling out sideways by two side boards "secured to the upright posts of the frame, which also receive "and support an adjustable back for the seat and a table. The "frame being suspended by suitable cords, the child is held

" therein safely and steadily. The back of the seat is so " attached to the side boards that it may be adjusted forward or " rearward at pleasure, and by the use of backstraps set at any " desired inclination. The post in front of the seat or bottom of " the frame, secured by a spring bolt, prevents the child from " slipping off." The drawings show a tripod stand supporting the said framework.

In another apparatus, the child's chair is carried at the extremity of a lever, the trunnions or fulcrum of which is at the top of a pedestal; the other end of the lever is connected with a spring, which is also attached to the frame that carries the pedestal. Certain notches in the lever enable the elasticity of the spring to be regulated, and a perforated strap varies the height of the chair from the platform. There is a loop, bar, spindle, and bow connected with the lever and with the chair. A pedal is arranged so as to be assisted by the spring in vibrating the chair.

In a third apparatus, levers attached to a frame maintain a chair in a horizontal position while moving up and down; a standard is pivoted to levers, and constructed with a socket receiving a stem, and cross bar, to support the chair and horse above the case, and permit them to be revolved.

[Printed, 1*s*. Drawings.]

A.D. 1864, December 6.—N° 3047.

NEWTON, WILLIAM EDWARD.—(*A communication from Joseph Antoine Emile Chazelles.*) — "Improvements in apparatus for " blowing bubbles from soap-suds or other liquids to amuse " children, and for other purposes, such as perfuming the atmo- " sphere of apartments."

The improvements are:—1. That the vessel and pipe form a single apparatus instead of being separate. 2. That besides the said vessel and pipe, the apparatus contains a second tube " surmounted outside by a cup, and dipping at its other end into " the liquid" contained in the said vessel.

The vessel has an opening at the top, which is closed by a stopper. The said stopper has the above-mentioned cup and tube fixed to it, also it carries a small tube communicating with its perforated centre, and terminating in a cone, upon which is fixed the india-rubber tube that forms the blowing pipe of the instrument; at its other end the said tube has a bone mouthpiece.

Soap solution being placed in the vessel, the stopper is screwed therein. The india-rubber tube is first blown through, the aperture in the cup being stopped with the finger; on removing the finger, the density of the air inside the vessel forces a small quantity of liquid into the cup, " then on blowing gently through " the tube, which is still held between the lips, a bubble will be " produced."

The drawings show three arangements of "bubble blowers," and a racket for catching the bubbles, consisting of an iron wire ring (fixed to a handle) in the centre of which a round piece of flannel is stretched by means of woollen threads.

[Printed, 8*d*. Drawing.]

A.D. 1864, December 8.—N° 3058.

NORTON, John.—" Improvements in the construction of bows " used by archers."

" My said invention relates to certain improvements in the " construction of bows used by archers for discharging arrows, " and consists in forming the bow of two or more pieces of wood, " horn, whalebone, steel, or other suitable material.

" When the component parts are placed in their final relative " positions, they are bound over by twisting on them a layer or " layers of india-rubber or other elastic matter or preparation, " such as elastic tape, the tension of which binds the component " parts together, so as to be sufficiently firm to be used for the " purposes herein-before mentioned.

" The advantages resulting from the above-described system of " constructing bows are, firstly, the production of a bow which " is more easily drawn than those hitherto used; secondly, the " non-liability to fracture by overdrawing the arrow; thirdly, the " construction of a bow which is easily taken asunder when " required for the purposes of strengthening or reducing its " flexibility, and which is again put together with equal facility."

[Printed, 4*d*. No Drawings.]

1865.

A.D. 1865, February 4.—N° 316.

HANCOCK, James Lyne.—(*Provisional protection only.*)—"Improvements in cushions for billiard and other like tables."

"My invention consists in manufacturing cushions of vulcanized india-rubber by the introduction of a tube or tubular vessel or core formed of previously vulcanized india-rubber into a mass of india-rubber, which is afterwards moulded into the form required for the cushion, and the whole vulcanized. In some cases I introduce a strip of previously vulcanized india-rubber to form the face or that part of the cushion with which the balls come in contact. Again, in some cases, in lieu of a vulcanized india-rubber tube, I insert a thin steel tube or tubular spring into the mass of india-rubber before being moulded and vulcanized."

[Printed, 4*d*. No Drawings.]

A.D. 1865, February 10.—N° 382.

EMANUEL, Henry.—"Improvements in boxing, fencing, and cricket gloves, and in cricket pads or guards."

According to this invention a glove is constructed of vulcanized caoutchouc "or of other like substance capable of being inflated and contracted;" it is furnished with one or more apertures through which it may be filled with air or other fluid, and which are fitted with valves for retaining and discharging the fluid. When the fluid has been discharged, the glove may be folded and packed.

In one plan, the glove (when inflated) may simply be closed fluid tightly, so as to remain inflated; this is accomplished by means of "an orifice which is hermetically closed when a sufficient quantity of air has been admitted." The glove may be constructed and inflated "in sections."

"An improved extensible and collapsing guard or pad," may be constructed and inflated in sections, "each part or section forming a chamber or cell for the reception of air, which is *blown into* or supplied to it through an air passage." Each cell *has at the side* furthest from the feed pipe a circular valve depending by a hinge; when the chamber is filled, the valve is forced over the air passage, so as to retain the body of air. "The " cells may be emptied of air by a discharging valve at the end " opposite to the feed. The cells (whether of the glove or of the " guard), may or may not be connected by strengthening mem- " branes, or thin strips, which are not inflated, but form joints or " articulations and yield with the motions of the hands or limbs."

[Printed, 8d. Drawing.]

A.D. 1865, February 11.—N° 393.

NEWBY, Edwin Henry. — (*Partly a communication from Anthony Leonard Fleury.*)—(*Provisional protection not allowed.*)— " Improvements in case-hardening or converting partially into " steel articles of wrought or malleable iron."

The object of this invention is to convert into steel portions of the said articles, "leaving other portions uncarbonized." A protecting coating, composed, say, "of a mixture of oxide of iron " with lime" is applied to those portions which are to be left uncarbonized. The articles are then submitted to the action of heated carburetted hydrogen gas, in a close furnace, in order to carbonize or convert the uncoated portions only of the articles, or the surfaces thereof, into steel.

"This invention may be applied with great advantage to con- " version into steel" "of the faces of skate irons." The air is excluded from the furnace during the carbonizing process. The carburetted hydrogen gas may be generated, in retorts, by the heat of the furnace fire, and, before being introduced into the carbonizing chamber, it (the carburetted hydrogen gas) should be heated in a separate chamber acted on by the same fire. "The " articles which are to be partly carbonized or steeled may have " the protecting coating or enamel applied to the parts which are " not to be steeled in the form of a paste or liquid which will dry " on the surface. To accelerate the process of conversion, other " gases may be used together with the carburetted hydrogen, as, " for instance, cyanogen and ammonia. The gases may be com- " pressed with advantage, as by that means their action will be " intensified."

[Printed, 4d. No Drawings.]

A.D. 1865, March 11.—N° 696.

HUNTLEY, Charles.—(*Provisional protection only.*)—" Im- " provements in cricket, racket, and tennis balls."

"This invention relates to certain improvements in cricket "balls, and in those used for rackets and tennis, whereby they "are rendered more durable than the ordinary balls, and also "impervious to the effects of damp or moisture.

"I propose to sew or stitch the leather cover or shell of the "ball with catgut, or similar material understood by the general "appellation of catgut, or other suitable gut, or with prepared "hide, instead of with hemp or flax as is ordinarily done, by "which means the ball is kept secure and prevented from bursting "open by the repeated blows of the bat. I also propose to render "the ball waterproof by the application of a cover or lining of "india-rubber, vulcanized or not, whereby when the ball is used "on a wet field it will not absorb the moisture, and therefore will "not become soft or liable to crack."

[Printed, 4*d*. No Drawings.]

A.D. 1865, April 12.—Nº 1048.

JACKSON, GEORGE.—"Improvements in rests or supports for "cues, or other similar instruments used for billiards or other "similar games."

In constructing the movable rest the inventor uses "a block or "bar, or axle, or frame, mounted upon a roller or rollers, or upon "a wheel or wheels." A hole is made in the upper part of the block, which hole is "suited to receive the playing end of the cue, "which is allowed to rest in it in such a manner that it may be "easily connected with it or disengaged from it at the will of the "player."

The drawings show the following modifications of this invention:—The rest may be mounted on three wheels, the block being allowed to turn upon a pivot either horizontally or vertically. The recess or hole may be made in the block, or it may be formed by springs of steel or other elastic substances, or by means of a clip. The block may be mounted on a roller. "The recess consists of "a split tube" "acted upon by springs" "as in the clips used "for holding candle shades;" by pressing certain projecting parts "the split tube is opened, and the cue may be released. The "recess or hole may be lined with leather, or india-rubber, or "similar soft substances, or may be made wholly or partly" of those substances. A frame having two holes may be mounted on two wheels, the axis being "placed eccentrically to the wheels." The axle and block may be made in one piece, or the axle may pass through a hole in the cue. "When it is desired to use the "cue and rest as a mace the front of the carriage or frame may "be made flat and to project beyond the point of the cue when it "is held in the recess."

[Printed, 10*d*. Drawing.]

A.D. 1865, April 15.—N° 1068.

CLARK, William.—(*A communication from Henry Loewenberg, and Emile Granier.*)—"Improvements in the manufacture of a "compound or material to be used as a substitute for india-"rubber."

In the Final Specification the invention is stated to be "the "use of resinous or balsamic substances (as copal, pitch, tar, or "their equivalents) with sulphur or its vapor, and in the appli-"cation of heat in combination with gluish or gelatinous sub-"stances, either with or without other ingredients, for the pur-"pose of vulcanizing or solidifying such gluish or gelatinous "substances or compositions in order to impart to them qualities "similar to vulcanized india-rubber."

In the Provisional Specification (and in the recital of it in the Final Specification) the invention is stated to be "the use of a "compound made of glutinous matters, acetic, pyroligneous, or "other acids, glycerine or oily matters, nutgall or analogous "substances, said ingredients being mixed together," "so as to "form a tough and elastic mass which can be used with advan-"tage as a substitute for india-rubber in making dolls' heads or "other toys." In making the compound, the acetic acid is diluted and added "to the glue in such quantity as to cover the "same;" when the glue is dissolved, the nutgall and glycerine are added. No mention is made of resinous substances, sulphur, or the application of heat in the Provisional Specification.

For toys, "coloring or pulverized matter may be added to make "said composition firm."

[Printed, 4*d*. No Drawings.]

A.D. 1865 April 17.—N° 1073.

MATTHEWSON, James John, and SCHLEF, Heinrich Louis Rudolph.—(*Provisional protection only.*)—"Improve-"ments in rotatory aerial swings."

"This invention relates to swings which rotate in a vertical " direction upon an axis mounted horizontally in vertical sup- " ports or standards, and consists, first, of an improved me- " chanical arrangement for imparting rotatory motion thereto." The stage used to impart rotary motion to the ordinary swing is dispensed with, and rotation is given to the axis by the following means :—" Upon the ground and concealed within an ornamental " Swiss cottage we arrange a system of wheelwork worked by " a winch handle, and in connection therewith we arrange a " pulley, over which and also over another pulley fixed on the " axis of the swing we pass an endless band or chain, by which " we transmit rotatory motion from below to the swing above.

" A further improvement in rotatory aerial swings consists in " adapting over each of the several cars of the swing a small " balloon having an air-tight cover fixed over a light framework, " and either inflate said balloons or not as may be desirable. The " use of these balloons is to allow the wind to act thereon, and " assist in turning the swing round upon its axis of motion, and " if inflated to reduce the weight of the swing when in use, " and make it move with less exertion."

[Printed, *4d.* No Drawings.]

A.D. 1865, May 30.—N° 1478.

STANLEY, William Hubert.—(*Provisional protection only.*) —" Improvements in wickets for the game of cricket."

" My improvements in wickets of the game of cricket consist in " constructing the wicket in such a manner that the three stumps " or vertical sticks shall be joined to a frame of iron, brass, wood, " or other suitable material, by means of a ball and sockett or " other suitable joint, the frame to be fixed firm to the ground by " means of pins, screws, or other suitable appliance. To each " vertical stick or stump one or more springs are attached of steel, " india-rubber, or other elastic material to keep it vertical before " being struck, and to enable it to regain the said vertical position " after being struck by the ball or otherwise. The cross pieces or " bails may be connected to the said stumps or vertical sticks by " means of a small chain or otherwise, to prevent their being " lost."

[Printed, 4d. No Drawings.]

A.D. 1865, June 1.—N° 1508.

BRINSMEAD, THOMAS.—"An improved exercising chair for " infants."

"The base consists of a plank of wood, supported upon suitable " feet; to one end of this plank is connected a second plank or " spring board, which may be either attached to the former " rigidly by a block at one end, or by means of a hinge, in " which latter case a metallic spring will be inserted between the " two planks. The second plank or spring board is placed at an " acute angle with the former, so that its free end rises up several " inches above the corresponding end of the base, and a chair or " seat is secured to or formed on the free end of the said plank or " spring board. From the first or base plank a vertical or slightly " inclined board rises up in front of the seat or chair, so that a " child placed in the latter can easily reach the former with its " feet. It will be evident that if an infant be placed in the chair " or seat and properly secured by a strap or otherwise, the " slightest movement of its feet against the vertical or slightly " inclined board in front of the seat will cause the spring board, " together with the seat or chair and the infant, to spring up and " down, and thus both amusement and exercise will be afforded " to the infant at the same time."

[Printed, 6*d*. Drawing.]

A.D. 1865, June 26.—N° 1704.

BATESON, SAMUEL STEPHEN.—(*Provisional protection only.*)— " Improvements in croquet mallets."

"This invention relates to improvements in the construction of " the heads of croquet mallets, whereby they are prevented from " splitting under a heavy blow whilst the player is enabled to " strike the ball with greater exactitude.

"According to my invention I propose to apply a stout cap of " leather, gutta percha, india-rubber, felt, or other suitable material over one or both ends or faces of the striking part of the " mallet, so that the jar or concussion of wood against wood is " obviated, and hence the liability to split the mallet head or the " croquet ball is avoided. The leather facing answers the same " purpose as the 'tip' to a billiard cue, and may be secured to the " mallet head in various ways; but I prefer to fix it thereon by " means of a circular screw clip or clamp, the leather or other rollers of gradually cooler temperature, the finishing rollers being nearly cold. "In this stage of the process the kampakaon "assumes the size and thickness required for the purpose to "which it is to be applied." *Eighth*, the kampakaon is then submitted "to a cold bath of metallic salts." The total effect is to render the kampakaon completely fire-proof. *Ninth*, "when "the kampakaon is intended for fireproof flexible roofing or for "pavements," fine dried sand, together with lime, chalk, or gypsum is incorporated with it in the mixing machinery. *Tenth*, when intended for carpets and similar purposes, designs may be printed, or otherwise marked upon it. *Eleventh*, when the kampakaon is to be of extra strength, veneerings of fabrics, wood, or metal, are inserted between two or more thicknesses thereof, "cementing the same together, after which it is again passed "through the rollers." *Twelfth*, peat or turf (of a fibrous nature) may be cut into blocks and submitted "to a steeping "process in the compositions before named." It is thus "fitted "for many useful purposes."

[Printed, 4*d*. No Drawings.]

A.D. 1865, July 11.—N° 1829.

SOUTTER, JAMES, senior, and **CHRISTIE, THOMAS**.—"Im"proved means for marking progress in the game of croquet and "other games."

In one example of this invention, a ring formed with ratchet teeth is fixed on the handle of a croquet mallet close to the head. A movable indicator ring engages with this fixed ring by means of ratchet teeth. A helical spring keeps the teeth of the indicator ring in gear with those of the fixed ring, which can, however, be shifted round with ease. Numerals are on the movable ring and an index point is on the handle.

In another instance, ratchet teeth are formed in the fixed ring only, whilst a spring (fixed in the movable indicator ring) engages with each tooth in succession as the indicator ring is shifted round step by step. "The appliance is shown as adapted for the "numbers 1 to 8, to suit the ordinary game of croquet with "sixteen stages, the first attainment of the number 8 correspond"ing to the turning post, and the second attainment of that "number indicating arrival at the winning post."

The movable piece or indicator may be a ring adjustable along the handle, a spring in the ring bearing upon serrations on the handle.

"In the case of other games than croquet the progress marker or indicator is applied to any convenient piece or instrument which the player has to use or carry, as the cue in billiards or the bat in cricket."

[Printed, 8*d*. Drawing.]

A.D. 1865, August 19.—N° 2145.

WHITFORD, GEORGE.—(*Provisional protection only.*)—"A toy or game called flying fish."

"My said invention consists of a double cone made of india-rubber or other elastic material, hollow and solid, with or without embossed patterns, in the form of cats' heads, fish, or other fancy figures, to be used as a toy in school or other rooms, playgrounds, and other places, so that the material being of a soft nature injury to persons, glass, or furniture is avoided. The method of using the toy and playing the game is as follows:—By striking the toy at either end with a bat or stick, and causing it to fly or be projected through a ring placed in any convenient position as may be determined upon by the player or players."

[Printed, 4*d*. No Drawings.]

A.D. 1865, August 25.—N° 2180.

BARBER, JOSEPH INGALL.—(*A communication from James Greenwood.*)—(*Provisional protection only.*)—"Improvements in skates."

"The skates are rendered self-adapting to boots of different sizes by means of expanding and contracting sole and heel clips or claws, which are adjustable by screws. The sole clips or claws (which I prefer to make of steel) slide laterally and the heel clips longitudinally."

[Printed, 4*d*. No Drawings.]

A.D. 1865, August 25.—N° 2190.

NEWTON, ALFRED VINCENT.—(*A communication from James Leonard Plumpton.*) — "Improvements in the construction of skates."

The rollers or runners are attached to the stock so that they may be made to turn by the rocking of the stock, and thus admit of the skater performing gyrations with ease. Two plates on the under face of the stock (the one at the toe, the other at the heel) "are similarly formed with a socket near the stock, and they " terminate in a journal which takes a downward inclined " direction. The socket receives the end of a longitudinal bar " which is formed at its other end into a socket to receive the " journal forming the termination of the fixed plate." This longitudinal bar is a portion of a "hanger," and is provided with four "horns for receiving the axle for a pair of rollers." "The " hanger is secured to the fixed plate by a vertical screw, which " passes through a block of india-rubber, interposed between " the head of the screw and the hanger. Allowance is thus made " for the oscillation of the hanger." "The axle of the rollers is " secured in position by a sliding key." When runners are substituted for rollers, they are held in clamps secured to the axle, and india-rubber collars on the axle form elastic supports to the clamps. "To check an undue lateral movement of the clamps " they are formed with projections which will bear against the " sides of the hanger when the limit allowed is reached. The " runners are made with straight parallel angular edges and admit " of being reversed in the clamps when one edge is worn."

[Printed, 8*d*. Drawing.]

A.D. 1865, August 28.—N° 2208.

BONNEVILLE, Henri Adrien. — (*A communication from Charles Edmond François Couturier.*) — (*Provisional protection only.*)—" Improvements in the construction of flying toys, also " applicable to other purposes."

"Wings of suitable size, made of thick paper or cardboard, are " attached to a central body of any required form, and of pro- " portionable weight. The whole is disposed so that the centre " of gravity falls near the front part of the body, and the " extremities of the wings are bent slightly backward and down- " ward. A rudder is placed at the hinder extremity of the body " which serves to aid its flight. When these bodies are wished " to fly rigidly, that is, with only the amount of play on the " wings to be obtained from the elasticity of the material, the " body, tail, and wings are fixed on the same plane, and form " one right line; but when the wings are wished to flap to imitate " the movement of a bird's wings, I make them hinged to the

" front and upper part of the body, and give the front part of the " body an inclined plane downwards, its centre a horizontal " plane, and the tail an inclination upwards. I also control the " flapping of the wings by a thread, a piece of wire, or other " suitable means."

" When the principle is intended to be applied to a parachute, " the wings would be made of silk mounted on a suitable " framework."

[Printed, 4*d*. No Drawings.]

A.D. 1865, August 29.—N° 2221.

GREGG, WASHINGTON PARKER.—" An improved roller skate."

This invention consists in " a roller skate constructed with a " stock, having a small supporting roller under each end, and a " large driving roller on each side."

The stock of the skate is made of " iron or wood of a suitable " form, and with any simple attachments for fastening it to the " foot of a person."

Two comparatively small rollers are placed for support, " one " partly under the heel, and the other partly under the toe of the " stock; two comparatively large rollers are arranged for driving, " one on each side of the stock under the arch of the foot near " the line of gravity of the skater. " The rollers, their axles, and " connections or fastenings," are made " of metal or wood, or " partly of both." " The axles or journals of the side rollers " project from the stock; these rollers enable the skate to run " with greater speed and ease than it could by means of the heel " and toe runners alone. They are so arranged that their " peripheries or the bearing surfaces thereof shall be a little lower " than those of the heel and toe rollers, in order that the skater " while skating may drive himself almost entirely by the large " rollers. Roller skates thus constructed run with great ease and " rapidity, and do not injuriously sprain the feet, nor weary the " limbs, and they will not easily tip backward or forward, and " they impart from the first an unusual feeling of security to the " skater in all possible movements."

[Printed, 8*d*. Drawing.]

A.D. 1865, September 6.—N° 2292.

PARKER, AUGUSTUS WILLIAM.—(*Provisional protection only.*) —" Improvements in ice houses, and in glaciaria or skating " *places, and in baths.*"

The object of this invention is to maintain ice in a congealed condition, so that it may be skated or slidden on. The heat absorbed during the process, by the water used for condensing, may be applied to maintain the heat of a tepid bath.

"The apparatus consists of a chamber or building provided " with any ordinary arrangements for preventing conduction of " heat from its interior, or else the chamber may be constructed " of some conducting surface, over which a stream of water is " caused to flow, and thereby absorb heat." A refrigerator, formed of a series of pipes, is fitted in a vessel fixed in the said chamber, and is surrounded with water to be frozen. A similar arrangement may be suspended over the water. Through the series of pipes is transmitted ether or other volatile liquid, which is evaporated; "or liquid carbonic acid or other liquefied gas " or ammoniacal gas may be used. The agents used may be " recovered by any ordinary processes." Streams of water may be caused to flow over series of pipes to condense the gases or cool the liquors in the said pipes. Cooled brine may be circulated " through the refrigerator of the glaciarium. Salts may be " dissolved in water or mixed with ice or snow and carried into " the refrigerator of the glaciarium. The salts may afterwards " be recovered by evaporation."

[Printed, 4*d*. No Drawings.]

A.D. 1865, September 11.—N° 2328.

HUNTLEY, Charles.—(*Provisional protection only.*)—" Im- " provements in cricket, racket, tennis, and foot balls."

"I propose to sew or stitch the leather cover or shell of the " ball with catgut or similar material understood by the general " appellation of catgut, or other suitable gut, or with prepared " hide, instead of with hemp or flax as is ordinarily done, by " which means the ball is kept secure and prevented from burst- " ing open by the repeated blows of the bat. I also propose to " render the ball waterproof by the application of a cover or " lining of india-rubber, vulcanized or not, whereby when the " ball is used on a wet field it will not absorb the moisture, and " therefore will not become soft or liable to crack.

"The foundation of the cricket ball consists of cork and " worsted, with or without feathers, and (if desired) with a a " small quantity of solution of gutta percha or india-rubber to

" give the balls a good action in the field. Hockey and croquet " balls may be made on the same principle. The foundation " may be covered with leather, salt or dry hide, or india-rubber. " Foot balls are to be made by the same stitching as the cricket " balls, leaving out the foundation."

[Printed, 4*d*. No Drawings.]

A.D. 1865, September 21.—N° 2402.

THOYTS, Newman Burfoot.—(*Provisional protection only.*) —" An improved billiard marker."

" At some convenient part of the billiard table a dial face is " inserted, around the edge of which are sunk a number of holes " corresponding to the subdivisions on a recording dial face " affixed to the wall of the apartment. On the upper end of a " vertical spindle, in the centre of the first-named dial face, there " is a spring handle, at the outer end of which is a point or stud " taking into the holes around the dial face. The lower end of " this spindle carries a bevil or mitre wheel taking into a corresponding wheel on one end of a horizontal shaft which is led " to the wall of the apartment, where by means of a second pair " of bevil wheels it gives motion to an upright shaft, on the " upper end of which a toothed wheel gives motion to the axis " of a pointer which traverses round the face of the recording " dial. Whenever a player moves the handle over a given number of holes the pointer of the recording dial will travel over " a similar number of sub-divisions, and so mark the number of " points made in the game."

[Prin ted, 4*d*. No Drawings.]

A.D. 1865, October 6.—N° 2572.

DAUMESNIL, Louis Alexandre Isidore. — (*Provisional protection only.*)—" A new mechanical propelling screw toy."

" My invention consists in placing in the interior of a hollow " article, having externally the form of a bird, or of an animal, " or any other form, and made of wood, cardboard, paper, metal, " or other suitable material, an ordinary clock movement for " giving motion to a propelling screw on the outside of the " article, and to which screw I can give the form of birds' wings " or any other required form. One or several of these birds or

" articles containing such movement is or are fixed to one or " several bars radiating round a vertical axis made to turn easily " in such a manner that the clock movement causing the screw " or screws to turn in the air the bar or bars radiating round " the axis is or are forced to turn and draw with them in their " movement the screws or other objects placed on any part of " the bar or bars, the whole thus forming a child's toy."

[Printed, 4*d*. No Drawings.]

A.D. 1865, October 10.—N° 2608.

GEDGE, WILLIAM EDWARD.—(*A communication from Eugene Ponsson, junior.*)—(*Provisional protection only.*)—" Improvements " in the construction of billiard tables, and improved apparatus " for ascertaining the degree of elasticity of the cushions, and " the strength of the cloth."

1st. Means of raising and lowering the cushions, according to the size of the balls.—" The cushions may be raised and lowered " by means of endless screws, and when they have arrived at the " desired position the ordinary screws come and press against an " iron plate placed at the entrance of the space left for the " vertical movement."

2nd. To ascertain the degree of elasticity of the cushions.— A hollow rule is used, having a certain inclination, " and preceded " by a curved part intended to act as a race. At the extremity " of the rule is placed a wooden angle block having a groove to " receive the piece of caoutchouc which a counterweight serves " to hold in a fixed position." A click and tumbler " lance " the ball, which rolls " in the hollow groove on the upper part of the " rule, and strikes the band;" after the shock, the ball stops at one of the divisions on the rule. In another plan, the hand of a graduated dial carries a ball at its extremity; the elasticity is indicated by the recoil from the cushion.

3rd. To test the strength of the cloth.—A " balance lever " is mounted on an angle piece to which the cloth is fixed; " a " counterweight is then drawn back, and the cloth stretches by " the opening of the two jaws, and if the counterweight be still " further drawn back the point at which the cloth will tear is " eventually attained, and the exact resistance of the cloth " ascertained."

[Printed, 4d. No Drawings.]

A.D. 1865, October 13.—N° 2642.

MAY, William. — (*Provisional protection only.*)—" Improve-
" ments in the construction and mode of fixing skates to the
" boots or shoes of the wearer."

" This invention relates to improvements in the construction of
" skates, whereby they are readily fixed and more effectually
" secured to the boots or shoes of the wearer. For this pur-
" pose I form the back end of the skate iron with a projection or
" tang suitably formed for being inserted into and secured in an
" ordinary spur box (by preference Maxwell's) formed or let into
" the back of the heel of a boot or shoe. The spur box may at
" other times be used for receiving the tang of a spur when
" required for that purpose. The form and position of the tang
" and of the box or recess formed in the heel may be varied. The
" front end of the skate is secured by a strap or otherwise over
" the toe or instep of the wearer, as is well understood."

[Printed, 4*d*. No Drawings.]

A.D. 1865, October 18.—N° 2694.

KING, Thomas.—(*Provisional protection only.*)—" Improvements
" in the manufacture of chemical toys known as Pharoah's
" serpents."

Heretofore, in the manufacture of the said toys, which are composed of sulpho-cyanide of mercury, are conical in form, and are covered by wrapping tin foil around them, " it has been found
" that the fumes given off when burning the toys are objection-
" able and offensive, to obviate which perfumes or scents are,"
according to the present invention, " introduced into the com-
" position as when making pastiles, so that in addition to the
" production of serpents these toys when being burnt will also
" give off agreeable perfumes to the surrounding atmosphere, as
" when burning ordinary pastiles; and in addition also to the
" ordinary compound very fine steel filings or other pyrotechnic
" compounds may be introduced, so that in burning sparks may
" be produced and thrown off according to the amount of such
" spark-producing matters introduced into the compound; and
" further, by the employment in the compound of strontium or
" other simple or compound chemicals colored flames and colored
" serpents may be produced; and in place of wrapping or coating

" the conical or other shaped articles of the compounds above " mentioned with tin or other foil," the inventor employs " capsules of tin, or of tin with other metal, to be formed without " seam in like manner to that in which capsules of like metals " are now produced for the covering of the ends of bottles and " other articles." The inventor encloses "each of the chemical " toys in such a capsule."

[Printed, 4*d*. No Drawings.]

A.D. 1865, October 26.—N° 2767.

BACON, GEORGE WASHINGTON.—(*Partly a communication from Edwin Faxon Bacon.*)—" An improved apparatus for gymnastic " exercises."

This apparatus is adapted for use in dwelling houses; it " consists chiefly in the use of and mode of adjusting two hand " rings and stirrups suspended by straps or cords from hooks " fixed in a joist or other strong portion of the ceiling. The " said straps or cords are arranged about eighteen inches apart, " and are made capable of vertical adjustment in order to regulate the height of the hand rings and stirrups from the ceiling " and floor, and to alter the distance between the rings and the " stirrups according to the height of the performer or to the " nature of the exercise being performed."

The links that attach the straps to the hooks " are formed to " admit their free movement in any direction." The buckle frame, for securing the straps or bands to the hand rings, has a bar, which when shut down upon the frame firmly holds the strap when the weight is applied. Layers of wood, glued together, may be used to form the rings, or they may be of metal in two parts rivetted together. The free ends of the straps have T-pieces, which hold the apparatus in position. The apparatus may be used as a trapeze by removing the lower straps, and attaching a bar to the upper straps. Adjustable cylindrical pieces of wood slide on the straps, for grasping by the hand. Knotted cords, provided with forked hooks, may be used instead of straps and buckles. The apparatus may be converted into a swing for children, and " used in connection with baby jumpers, rocking " horses, nursery yachts, see-saw, and other games, amusements, " *and exercises*."

[*Printed, 1s. 6d.* Drawings.]

A.D. 1865, October 27.—N° 2770.

SANSON, Robert Bell.—"Improvements in roller skates "and in the rollers to be used therewith, and for other pur- "poses."

A pair of rollers, fitted on the same axis, are used "in lieu of "one or more of the rollers, as employed in ordinary skates." The said pair of rollers are fixed "about the centre of the skate," and are mounted "on a central swivel moving in a vertical "direction. The object of mounting the double roller in this "manner is that perfect freedom of action is thereby obtained "for turning. A roller or rollers mounted on an eccentric or on "the ordinary castor principle may be used." For turning the wheels back to their central position after any evolution in skating has been performed, one end of a stiff double V or other shaped spring is fixed on the under side of the skate. "The free ends "are then made to grasp or press against, on either side, a tongue "or projection formed and projecting from the axle of the double "roller or rollers, so that when the rollers have been turned by "any evolution to the right or left the spring pressing upon the "tongue or projection causes the said rollers to resume their "central or normal position. The improved rollers are prevented "from turning too far round by means of a stop block, against "which the roller frame comes in contact."

"The improvements in the rollers consists in making the "spools or centres thereof of vulcanite, or ebonite, or other "similar substances, separately or in combination, in lieu of "metal, as now used, which spools or centres employed in com- "bination with vulcanized india-rubber or other substances on "the exterior."

[Printed, 4*d*. No Drawings.]

A.D. 1865, October 30.—N° 2790.

TOLHAUSEN, Frederick.—(*A communication from Owen Wilson Taft.*)—"Improvements in skates."

1st. "The application of a heating attachment to a skate, said "heating attachment being composed of a chamber attached to "the foot plate or any other equivalent device in such a manner "that by inserting into said chamber a heated stone or other "body, or a burning lamp, the foot plate is warmed."

2nd. "Arranging the heating attachment in such a manner

" that the heater can be introduced or removed without taking
" the foot off from the skate."

3rd. " Making the foot plate of the skate removable in such a
" manner that it can be conveniently taken off to get access to the
" heating chamber below."

4th. "The application to the foot plate or to the heating
" chamber of hook catches in combination with studs projecting
" from the sides of the heater, and with a spring secured to the
" upper surface thereof in such a manner that by the combined
" action of said spring, studs, and hook catches the heater is
" held in position and prevented from moving to and fro in the
" heating chamber."

5th. " Stamping the foot plate out of sheet metal, and pro-
" viding it with a rim or flange extending all round its edge in
" such a manner that a foot plate can be produced which is very
" light and yet sufficiently stiff and strong to support the weight
" of the skater."

6th. Providing the heating chamber with suitable draught
" openings and doors, so that if a lamp is used in the same,
" said lamp can be lit without taking it out of the chamber, and
" that the flame will burn freely while the chamber is secured to
" the skate."

[Printed, 8*d*. Drawing.]

A.D. 1865, November 2.—N° 2821.

JONES, Henry.—" Improvements in the implements or articles
" employed in the game of indoor croquet."

1st. " Bending the ends of indoor or table croquet hoops so as
" to form feet on which the hoops will stand, the feet being so
" disposed that they may be passed through a cloth and held
" between the cloth and the table, the effect of which is to keep
" the hoop in an upright position without further support, and
" without causing a projection that interferes appreciably with
" the game."

2nd. " Forming such hoops in any other way with feet or bases
" fixed thereto projecting from the plane of the hoop on one or
" both sides, so that when these projecting feet or bases are
" passed into holes, slits, loops, pockets, or other equivalent
" *preparations* in the cloth the loops are held upright " in a
manner similar to that described above.

For playing this game, glass balls are employed in preference to wooden balls. The inventor prefers "to have such balls so " manufactured by any known means as to be perfectly true, and " to have them annealed in such a manner as to prevent them " from chipping when struck by the hammer or one against the " other."

[Printed, 8*d*. Drawing.]

A.D. 1865, November 7.—N° 2874.

SMITH, GEORGE ALEXANDER.—(*Provisional protection only.*)— " Improvements in the manufacture of cushions for billiard " tables."

" This invention has for its object improvements in the manu" facture of cushions for billiard tables.

" In order to cause the cushions of billiard tables to throw off " the ball with greater truth than india-rubber cushions as at " present used I apply to the face of the india-rubber cushion, " where the ball strikes, a hard face which will yield or bend but " very slightly to the blow of the ball; this hard face does not " interfere with the action of the elasticity of the india-rubber, " but it distributes the blow over a longer length of the india " rubber, and by thus preventing a deep indentation being made " at the moment of striking it avoids the false angle being given " to the ball which results from the ball burying itself in the " cushion. The material I prefer for the hard surface is steel " in the form of a thin band with a suitable convex surface for " the ball to strike against; this strip is securely attached to the " india-rubber, and the whole is then covered as is usual."

[Printed, 4*d*. No Drawings.]

A.D. 1865, December 9.—N° 3186.

MARSHALL, HENRY SNART.—(*Provisional protection only.*)— " Improvements in furnishing and adapting ordinary tables for " playing billiards."

The inventor takes "any ordinary dining or other oblong (by " preference) table and by simply placing cushions upon it" renders it "suitable for billiards." A green cloth having been laid over the table so as to form a "level surface," cushions are then laid on, either in four or six pieces, and are connected at the corners "by metal bridge pieces, to which the wire stretchers of

" the pockets may be attached." These metal bridge-pieces are arched " upwards instead of outwards as usual, in order to allow " the ball to pass freely underneath and while still on the surface " of the table, in order that it may run over the edge of the table " and into the pocket." Instead of weighting the metal bridge-pieces of the cushions, the inventor sometimes provides " two, " four, or more cramps, the upper limb of each of which enters " a hole in the side cushions, while the lower one, provided with " a thumbscrew, passes under the top of the table and pinches " the cushion thereto. Instead of making the cushions with " pockets they may be dispensed with, as in the French tables for " playing the cannon game only. In this case the cushions will " require attaching to each other at the corners only, or they " might even be all fixed together like a frame and simply laid " on the table top. Dining and other tables to which these " cushions are furnished may of course be made with slate tops " to improve them as billiard tables."

[Printed, 4*d*. No Drawings.]

A.D. 1865, December 11.—N° 3195.

KING, Thomas.—(*Provisional protection only.*)—" An improved " pyrotechnic toy."

The inventor mixes " certain chemical compounds in combination " tion with metals in the following proportions:—Nitre, four " parts; sulphur, two parts; carbon, two parts; antimony, one " part; and metallic antimony, one part. These mixed together " and folded in tissue paper in a cylindrical form when ignited " and held downwards will throw off flakes of fire and will " present a harmless and attractive pyrotechnic toy."

The addition which the inventor has " made to the known combination " bination is the addition of antimony and metallic antimony." Metallic antimony is named, " but bismuth or any other suitable " metal may be used."

[Printed, 4*d*. No Drawings.]

A.D. 1865, December 14.—N° 3229.

BUTTON, Charles Pomeroy.—(*A communication from Julius Walter Sperry.*)—" An improvement in swings."

" This invention consists in suspending in front of an ordinary " swing one or more additional rods or cords, to the lower end of

“ which is attached a foot board or treadle so arranged in con-“ nection with the seat that the operator may by pressing the “ board with the foot or feet produce a forward motion, and on “ raising the foot or feet the swing will fall backwards by its own “ gravity, and by repeating the operation the swing may be made “ to rise to any desired height. I prefer to use four rods or “ cords, two as a support for the seat, and two as a support for “ the footboard, so arranged and connected together that the four “ rods or cords may move simultaneously when the footboard is “ pressed by the operator. The rods or cords supporting the “ footboard or treadle may be fastened at the upper end either in “ front, at the sides, or in the rear of the upper portion of the “ rods or cords supporting the seat.”

If “ the upper ends of the rods or cords supporting the foot-“ board or treadle are suspended in the rear of the rods sup-“ porting the seat the motion of the swing will be the reverse of “ that above described, that is to say, the pressure of the foot “ or feet against the footboard or treadle will cause the swing to “ move backwards, and when relieved from said pressure will “ move forward by its own gravity. The operator may, if he so “ desire, produce or accelerate the oscillating motion of the aerial “ chair by pulling one or more of the front rods or cords with “ his hands.”

[Printed, 10*d*. Drawing.]

A.D. 1865, December 19.—N° 3271.

HARRISON, George Stephen, and FEATHERSTONE, Stephen Eversfield. — “ Improvements in the machines “ called roundabouts.”

A framing composed of a centre from which start any number of flat arms or spokes, is placed on the pivot of a standard so that it may be revolved thereon. A wooden horse is placed at the end of each arm; a chair works in a slot in the arm, “ the “ length of the slot permits the chair to be moved nearer to the “ centre or boss or farther from it, and towards the horse,” as may be found desirable for the adjustment of weight. “ The “ machine being in position the boys of the party are placed on “ the horses and the girls or little children in the chairs. The “ weight being adjusted one of the arms is canted towards the “ ground or floor, and the boy on horseback gives it an impetus

" with his feet (as with a velocipede); this has the effect of
" urging the horse forward, and at the same time lifting it; the
" next arm or spoke then assumes the position left by the first,
" the pedal motion is repeated, and a greater speed is given to
" the turning of the machine, until by repeated foot pressure it
" attains a high rate of velocity. Cessation of pedal urging soon
" brings the machine to a state of repose."

The drawings show various fittings to the top of the standard to accomplish the above purposes. In one case the journal for a transverse axis on the frame is fitted to the said pivot. In another case a cup and ball joint is used. In a third case a conical cap rotates on a pointed pivot. Lastly, besides the pivot (which is inclined) the standard may be fitted with an inclined plane and friction rollers.

[Printed, 8*d*. Drawing.]

A.D. 1865, December 23.—N° 3325.

NEWTON, William Edward.—(*A communication from Henry Wurtz.*)—" Improvements in the preparation of glue or gelatine
" so as to render it insoluble in water, and applicable by the
" admixture of other substances to various purposes for which
" common glue or gelatine cannot now be used."

Amongst the uses to which the said insoluble glue is adaptable are billiard balls and toys.

" The glue or gelatine in the form of a strong solution in water" is heated "together with a strong solution of chromic acid,
" or of an alkaline bichromate." When the resulting solution is allowed to cool and gelatanize, and the jelly is dried, it will be found to be insoluble in water. Before the bichromate is added, the character of the final product may be modified by the admixture, with the glue, of various substances, such as heavy powders to give weight, sand or emery to afford hardness, and chopped fibre to increase the toughness of the said product.

As considerable shrinkage takes place during the drying of these compounds, billiard balls are built up gradually by uniting previously-dried sheets, using the compound in a liquid form for that purpose; the sheets are "kept clamped together between
" sheets of wire gauze until solidly united. Two more sheets
" may then be applied above and below the former and united
" thereto in the same way, and so on until the requisite thickness

" has been attained." According to another method (yielding large masses) the thin sheets may be sliced while the substance is in the form of jelly, and dried on polished metal and then between layers of fine wire gauze.

[Printed, 6*d*. No Drawings.]

A.D. 1865, December 23.—N° 3334.

HURN, George, and HURN, Daniel.—" Improvements in " obtaining and employing continuous lengths of tanned leather " for various useful purposes."

Some of the said purposes are ropes for " swings, gymnasiums, " tight, slack, and skipping ropes;" also bags, nets, or netting for " racket, cricket, or like purposes."

This invention " consists in obtaining and employing con- " tinuous lengths of leather out of tanned skins or hides in one " piece, of an oval or helical form, cut to or from the centre of " the said skin or hide into strips or bands in lengths varying " from one hundred to two thousand feet or more, and subse- " quently passing the same through dies for rounding or other- " wise forming them into strips, threads, bands, or otherwise," suitable for the above purposes.

" Having selected the prepared skin or hide, and pared or " rounded off the edges or corners, the continuous lengths are " cut therefrom by causing the knife or instrument to traverse " the entire surface of the skin, so as to divide it in an endless " piece or coil, which is subsequently submitted to a longitudinal " stretching, damping, greasing, or hammering, as may be found " necessary for straightening or removing the angles and curves " formed by the cutting."

In this invention the hide is not traversed concentrically against a stationary knife, but is cut into a continuous thread by following more or less the outside edge of the skin, which is nearly oval.

The drawings show the manner of cutting a skin and various applications of the invention, but no machinery is set forth or represented.

[Printed, 8*d*. Drawing.]

1866.

A.D. 1866, January 13.—N° 119.

BROOMAN, Richard Archibald.—(*A communication from Hippolyte Huriaux and Lucien Faille.*)—" An improvement in " spring tops."

" This invention relates to those spring tops which are formed " in two parts, viz., the head in which the spring barrel is fitted, " and the body or top proper. These tops are spun as follows:— " The head is connected to the top proper, and by turning the " head the spring is stretched and wound on a central tube; then " by pressing on the end of the tube the top proper is discon- " nected from the head, receiving a rotary impulsion from the " spring so that it spins on a table or floor, while the head is " left in the hand of the operator.

"The present improvement consists in magnetizing this head, " so that if it be applied to the upper end of the axis of the top " when the top is spinning the top may be suspended by the " magnet and still retain its rotary motion, and it may be caused " to receive any gyral inclination. I prefer to apply the magneti- " zation to the upper end of the head of the top, and in such " case the head must be inverted after the top proper has been " released therefrom."

[Printed, 8*d.* Drawing.]

A.D. 1866, January 16.—N° 144.

KLOTZ, Marc.—(*Complete Specification, but no Letters Patent.*) —" Improvements in toy arms and projectiles."

" The improved projectile is composed of steel springs or other " substance presenting sufficient elasticity, arranged so as when " compressed to be introduced into the barrel or tube of the arm. " On these springs, which form the skeleton of the projectile, is " fixed, in any suitable way, a membrane of paper fabric, india- " rubber, or other analogous material, in such a way as to be " easily removed and replaced by another, and to fold upon itself " or shrink up like the covering of an umbrella when introduced " into the barrel or tube. On this membrane are figures, draw- " ings, and subjects of different natures, and when compressed

" with the springs it may be arranged so as to form a box or case
" for different articles. When the projectile is driven out of the
" barrel the springs, being no longer compressed open out with
" the membrane, so that the image represented on it presents
" itself, or the articles contained in it are thrown out.

"The projectile, instead of being independent of the arm, may
" be fixed to it, being temporarily or permanently attached to a
" moveable rod placed in the barrel, the end of this rod coming
" towards the end of the barrel when the arm is fired, so that the
" projectile developed presents itself and remains at the end of
" the barrel."

[Printed, 6*d.* Drawing.]

A.D. 1866, January 23.—N° 216.

DARE, Joseph, junior.—(*Provisional protection not allowed.*)
" —Improvements in pyrotechnics."

" This invention consists in producing imitations of volcanic
" eruptions and explosions of fortifications. I construct a box
" or receptacle having one or more small openings or outlets, and
" in this box or receptacle I place a quantity of prepared pyrotechnic
" paper divided into small pieces. When the box is
" sufficiently charged I insert into the opening or openings a spill
" composed of will-o'-the-wisp paper or other prepared pyrotechnic
" paper or other suitable material to communicate fire to the
" contents of the box."

[Printed, 4*d.* No Drawings.]

A.D. 1866, February 24.—N° 573.

BARBER, Joseph Ingall.—" Improvements in skates."

" This invention has for its" [object?] "the formation of
" skates adapted for boots or shoes of different sizes, and capable
" of being attached thereto and detached therefrom instantaneously
" without the aid of straps, buckles, or other ordinary
" fastenings."

The means of effecting these improvements " consist, first, in
" affixing the skate irons to sole and heel rests " [and?] " clips;
" 2ndly, in making these clips respectively adjustable longitudinally
" for embracing and being affixed to the heel, and adjustable
" laterally for embracing and being affixed to the soles; and
" 3rdly, in making the said sole and heel clip rests, either or both

" of them, adjustable along the skate iron at a greater or less " distance from each other."

The drawings show a skate made in the manner described above. The said sole and heel rests and clips are affixed to the skate iron by rivets. The sole plate rest carries two serrated clips in lateral grooves; a pivoted adjusting plate (under the sole plate and with a spiral groove therein) by being turned, causes the clips to approach towards or recede from each other, short flanges of the clips fitting into the said groove. The heel clip consists of a heel abutment rivetted to the skate iron and a screw hinged thereto; on the screw the adjustable heel clip moves towards or away from the abutment, either by itself turning on the screw, or by means of a milled head and collar. The distance between the sole and heel rests may be adjusted by clamping the sole and heel plates to slots in the skate iron. Modifications of the above arrangements are mentioned.

[Printed, 8*d*. Drawing.]

A.D. 1866, February 28.—N° 609.

HICK, John.—"An improved clip for fastening leather or other " tips to billiard cues."

This clip "is intended to press and hold the tip firmly against " the end of the cue whilst the glue or cement used for fixing the " tip is setting." The clip, constructed of wood, consists of a tube "of a bore to allow of its fitting loosely over the tip end " of the cue." The clip may be closed at one end so as to form a butt, or the bore may extend through the clip, "in which " case the butt end is fitted with a screw by which the necessary " pressure is applied to the tip." The tube is divided into segments by means of slots extending nearly the whole length of the clip. An external hoop or collar slides or screws along a taper part of the clip.

"Glue or cement having been applied to the bottom of the tip " and to the end of the cue, the tip is placed upon the cue and " the clip slipped over it, and whilst the closed end of the clip is " pressed against the tip the sliding collar is pushed on, whereby " the sides will be drawn or forced concentrically together and " made to grasp the cue and hold the clip firmly in its place. If " a clip fitted with a tightening screw as above described is used, " the clip is simply placed upon the cue and fixed by means of

" the sliding collar, and pressure brought to bear against the tip " by means of the screw."

The drawings show the arrangements described above, also the following modifications:—A tipper with three longitudinal slots " which reach beyond the end of the bore;" the sides of this tipper grasp the end of the cue. A tipper with four slots " cut " from the butt end downwards."

An apparatus, in which a tipper has a small flat file passing through its end, serves to square and dress the cue ends " before " fixing a new tip."

[Printed, 8*d*. Drawing.]

A.D. 1866, March 10.—N° 739.

HUNTLEY, CHARLES.—(*Provisional protection only.*)—" Improvements in cricket balls, racket, tennis, and foot balls."

" I propose to sew or stitch the leather cover or shell of the ball " with catgut or similar material, understood by the general appellation of catgut, or other suitable gut, or with prepared hide, " instead of with hemp or flax as is ordinarily done, by which " means the ball is kept secure and prevented from bursting open " by the rebated blows of the bat.

" I also propose to render the ball waterproof by the application " of a cover or lining of india-rubber, vulcanized or not, whereby " when the ball is used on a wet field it will not absorb the moisture, and therefore will not become soft or liable to crack.

" The foundation of the match cricket ball consists of cork and " worsted, with or without feathers, and (if desired) with a small " quantity of solution of gutta percha or india-rubber, or gum, to " give the balls a good action in the field. This improved foundation being compressed by the winding of the worsted, or by " pressure in a mould, will give a degree of density to the foundation, and render the ball firmer and more lasting than the " ordinary balls, and the action of the ball in the air will be much " improved. Hockey and croquet balls may be made on the same " principle. The foundation may be covered with leather, salt or " dry hide, or india-rubber, or with cotton fibres. Foot balls are " to be made by the same stitching as the cricket balls, leaving " out the foundation."

[Printed, 4*d*. No Drawings.]

A.D. 1866, March 16.—N° 783.

FULLER, WILLIAM COLES, and MARGETTS, JOHN.—(*Provisional protection only.*)—"Improvements in certain parts of the "apparatus connected with the game of cricket."

"This improvement relating to the game of cricket consists in "a new base plate for the wicket which may be formed of brass "zinc, or other suitable metal of an oblong form with rounded "ends, and into which base plate are inserted at the proper intervals three sunken rings or collars of vulcanized india-rubber "designed to receive the stumps of the wicket instead of driving "them, as at present, into the ground.

"The base plate may also be made wholly of india-rubber "moulded into a suitable form.

"By the rules of the game a wicket should be exactly 8 inches "wide, as any deviation gives an unfair advantage to one side or "the other. But as the wicket may be displaced many scores of "times in a day the ground becomes worn and broken, so as to "render it difficult to replace the stumps with accuracy. By the "arrangement now specified all uncertainty is avoided.

"The base plate with its india-rubber sockets is let into the "ground and securely fix'd by 2 or more pins of suitable length, "and when so fixed need not be removed through the whole "game, or many games, if necessary.

"The distance of each stump is preserved with unfailing accuracy, and the upright position secured by the elasticity of the "india-rubber collars."

The drawing shows the above points by means of a plan and section of the base plate. The part of the stump entering the socket is of a cylindrical form and is not pointed at the end.

[Printed, 6*d*. Drawing.]

A.D. 1866, March 24.—N° 884.

MOSELEY, WALKER.—(*Provisional protection only.*)—"Improvements in croquêt balls."

"By my improved method of making the said balls the distinguishing marks cannot wear off, as they are produced by the "insertion or inlaying of portions of wood or other suitable "material in the body of the ball. The said portions so inserted

" or inlaid being of a different color to the other portions of the " surface of the ball, and being arranged in points or rings or " other figures which form a distinct pattern or device varied as " desired, so that each ball is easily distinguished from the other " balls used in the game."

" One half of each set of balls is made of boxwood or other " white hard wood, the other half set being of ebony or other " dark-coloured wood. The inserted or inlaid portions being of " such a colour as to afford the greatest contrast to the remaining " surface of the ball. When the figure or device has been so " formed the ball is placed in the lathe, in which its surface is " turned quite round and smooth. A very highly finished " appearance is thus imparted to the surface of each ball, while " the durability of its distinguishing pattern or device is ensured, " no matter how much it may be used, as the said pattern can " wear away only with the substance of the ball."

[Printed, 4*d*. No Drawings.]

A.D. 1866, April 16.—N° 1075.

DODGE, George Pomeroy.—(*Provisional protection only.*)— " Improvements in cues, rests, and other implements used in " playing the game of billiards, bagatelle, and other similar " games."

" The said improvements consist in the application of india-" rubber or substances composed partly of india-rubber to the " formation of cues, rests, maces, and other implements used in " playing billiards, bagatelle, pool, or other games of a like " nature."

" In the construction of the said implements the india-rubber " used is either vulcanized, mineralized, or otherwise hardened; " or the compound substances known as vulcanite, ebonite, or " other combinations are employed. The said cues may be of the " same form as those ordinarily employed, which are generally " made of wood. The butt or end of the cues may be made of " any required weight to suit the style of any player without " alteration in its size or form and without the employment of " the ordinary expensive and troublesome processes for increasing " or diminishing its weight."

" The handles of the rests and maces are by preference made " of wood and secured to the ends or heads of the several imple-

" ments in the usual manner, though if required they also may " be formed of the same material as the said ends."

[Printed, 4*d*. No Drawings.]

A.D. 1866, April 23.—N° 1141.

BARNETT, Frederic.—An "improved aquatic firework."

"The present invention has for its object the manufacture of " a new and improved pyrotechnic toy, which is effected by the " decomposition of water at the ordinary temperature by means " of sodium, potassium, the phosphor of calcium or the oxi- " carburet of potassium producing the phenomenon of light or " fire upon being brought into contact with water."

With respect to sodium, "by means of sufficiently circum- " scribing and enclosing the centre and greater portion of the " sodium, and thus encouraging the caloric, the temperature " rises sufficiently and almost suddenly, and the result is the " almost immediate phenomenon of light or fire in the midst of " the water. To attain this result, little capsules are employed; they are "formed of little bodies of cotton," which by being dipped in melted wax or stearine, or coated with gum, "excludes " humidity for a time." "A small portion of the before-men- " tioned materials is introduced in the centre" of the capsules " by means of a small hole, which with sodium may be left " open or closed;" "if closed, the covering stopper or plug " must be made of substances or materials of an adhesive " nature, but perfectly soluble in water."

Various toys may be mounted with the said capsules, such as ships (in which the port holes contain the capsules), "fish, water " fiends, insects, and others."

The same materials may be employed "in the manufacture of " large pieces of fireworks," "which being thrown in or on sheets " of water," will, by means of the sodium or other matters, " immediately after their contact with the water communicate " the fire to the whole piece or pieces."

[Printed, 4*d*. No Drawings.]

A.D. 1866, May 2.—N° 1246.

STANLEY, William Hubert.—"Improvements in cricket " *wickets.*"

The "improvements in cricket wickets consist in having a metal "plate furnished with two or more pegs to secure it to the ground, "to this metal plate are attached three short tubes, which may be "made of brass, iron, or other suitable material; these tubes are "connected in such a way with the metal plate by springs that "they can yield in any direction, either backwards or forwards, to "the right hand or left. The stumps are placed in the tubes, "and the whole appearance of the wicket is almost exactly the "same as the ordinary one. When however the wicket is struck "or knocked down the stumps immediately regain their upright "position by means of the springs above mentioned."

[Printed, 6*d*. Drawing.]

A.D. 1866, June 8.—N° 1579.

LEE, David Thorpe.—(*Provisional protection only.*)—"Improvements in lay figures, dolls, and manikins."

"This invention refers to an improved mechanical contrivance "for actuating the joints and parts of the body in figures of the "above descriptions, and with this view I connect the joints or "other moving parts by springs, either of metal, india-rubber, or "other resilient material, in connection with cords and pulleys "where required; these springs are secured in any suitable "manner, the joints being formed upon the ball-and-socket principle, so that movement of the parts is allowed in any direction, "and when placed they are so retained by the action of the "springs without any intervention of set screws or other "appliances. By a simple arrangement of buckle and strap passing over a pulley fixed in any part of the figure the action of "the springs may be tightened or relaxed at will."

[Printed, 4*d*. No Drawings.]

A.D. 1866, July 21.—N° 1896.

CANOUIL, Germain.—"Improvements in amorces or primings "for fire-arms, toy arms, or detonating toys."

This invention "consists in providing a sheet or sheets of "paper, tissue, or other similar suitable thin material with a "number of dots or small portions or heaps of any suitable "fulminating composition, the said dots, heaps, or portions "being situated at such distances apart from each other so as to "prevent the exploding or detonating of one of them to set fire

" spontaneously to the next or remaining ones, whilst in order to " prevent their detonating taking place by mere rubbing or " handling they are covered with any suitable protecting varnish " or with another sheet of paper, tissue, or other similar suitable " light material, which is caused to adhere to the first sheet by " means of glue or other suitable cement, after which the sheet or " sheets of amorces thus obtained are divided or cut into strips, " rounds, squares, or other suitable portions of any suitable form, " but by preference into strips, each of these latter containing " two, three, or more of the said amorces, each of which latter is " to serve at its turn as a priming for fire-arms, toy arms, or " detonating toys, to which the said strips or other portions of " the sheets are applied, by which means the said strips, rounds, " squares or other suitable portions will form repeating primings, " and for which reason I give to the said strips or other portions " the name of Canouil's harmless, repeating amorces or primings."

[Printed, *4d.* No Drawings.]

A.D. 1866, July 21.—N° 1897.

CANOUIL, GERMAIN, and BLANCHON, FRANÇOIS ARMAND.

" Improvements in fire-arms, toy-arms, and detonating toys."

The object of this invention is, first, the application to fire-arms, toy-arms, or detonating toys of Camouil's " repeating amorces or " primings" (see N° 1896—A.D. 1866); second, " an improved " arrangement of fire-arms, toy-arms, or detonating toys for " allowing the easy application of the said amorces or primings."

The trigger and hammer respectively turn on pivots, and the trigger is jointed to a rocking catch which is fitted with suitably-placed teeth, two to act on the hammer and one to advance the strip of amorces. A pin or pivot connects the rocking catch to a " pushing rod" (partially in the barrel of the pistol), which a helical spring tends to push towards a " main spring" (formed of a bent steel wire) in the stock. The said main spring acts in a notch provided in the lower part of the hammer between two projecting parts in the said hammer. The one upper tooth or spur in the rocking catch, during the advancing motion towards the muzzle, pricks from underneath into the strip; during the receding motion, the catch " is lowered so far as to prevent the " spur from coming in contact with the strip." By drawing on the trigger the hammer becomes cocked, and the catch pushes the strip forward until one of the fulminating dots lays on the barrel for the top of the hammer to strike on; the explosion of the dot is consequently produced.

[Printed, 10*d*. Drawings.]

A.D. 1866, August 15.—N° 2099.

HOFFMAN, John William, and WILSON, George Rowe.—(*Provisional protection only.*)—" Improvements in kites."

"This invention is for an improvement in kites by means of " forming a double surface of india-rubber sheeting, or other " suitable material, fastened at the edges or otherwise by gums " or other like material, so ensuring the necessary flatness, yet " admitting of being inflated with common air or gas without " impeding the action of the wind in forcing the kite upwards; " this double surface is kept at a stretch in the form of a kite or " other figure or shape by two or more cross bars of steel or any " other suitable material, which can be folded up, expanded, or " shortened by the use of rivets or hinges or otherwise, and for the " fastening of which to the body of the kite or other figure loops " or bands are provided; on the withdrawal of such cross bars " the kite can be folded up so as to be carried in a pocket or " small bag."

[Printed, 4*d*. No Drawings.]

A.D. 1866, September 7.—N° 2305.

KLEIN, William Frederic Bernhard.—(*A communication from Leopold Burmeister.*)—(*Provisional protection only.*)—" Im-" provements in the construction of roller skates."

In an arrangement for guiding skates, two rollers are "under " the fore part of the sole of the skate, and two under the back " part." The axle connecting the two front rollers is capable of moving upon a vertical pivot in the centre of a framing under the sole of the skate; the amount of " play " thus given to the rollers is regulated by a rod, which "passes through a loose bearing " working in a groove" fixed along the under part of the skate. " The position of the back rollers is regulated in the same " manner."

Instead of two bearings, as in the above plan, the rods from both front and back rollers may pass through one bearing only, the said bearing rotating on its own axis; the angle at which the bearing is set regulates the "play" of the rollers; this method dispenses with the grooves.

To control the speed of the skater, a small wheel "is placed at "the back part and extending beyond the heel of the skate;" this wheel does not touch the ice except when required by the skater. The framing which supports the axle of the small wheel is connected to the framing of the back rollers. Two springs attached to the latter framing, in connection with a leather brake, enable the skater to check his speed by pressing his heel down so as to cause the small wheel to touch the ice. The fore rollers (by the depression of the heel) being lifted off the surface of the ice, the back rollers are the only ones then touching the said surface, "and the speed is checked or stopped according as may be "required."

[Printed, 4*d*. No Drawings.]

A.D. 1866, October 11.—Nº 2629.

ROWE, Daniel.—(*Provisional protection only.*)—"An improved "toy."

"This invention consists of an improved carriage revolving toy "constructed as follows:—A carriage of any suitable form is "mounted upon wheels and provided with a handle or cord by "which it may be drawn along the ground. Fixed in this carriage is an upright wire (or wires), and upon the wire (or each "of the wires) is placed a circular horizontal table in such a way "that the said table can revolve upon the wire and rests upon "one of the running wheels of the carriage or upon a wheel fixed "upon the axle for that purpose. It will be evident that (as these "tables rest upon the wheels) whenever the carriage is drawn "along the tables will be caused to revolve, and upon these tables "I propose to fix toy solders, animals, or other small toys, which "are thus set in motion whenever the carriage is drawn along. "The carriages may be made with one, two, or more tables revolving in the same plane or one above the other, and the tables "are moveable on and off the wires, so that by having a set of "different tables with various kinds of soldiers or other small toys "fixed thereon, and changing them at pleasure, the appearance "of the toy may be altered, and one carriage may thus be adapted "to several different toys."

[Printed, 4*d*. No Drawings.]

A.D. 1866, October 26.—N° 2765.

ABEL, CHARLES DENTON.—(*A communication from Augustin Boulanger.*)—(*Provisional protection only.*)—" A new or improved " percussion spinning top."

The said top is called the " needle gun top." A fusee or an explosive compound " is placed in an open capsule on the upper part " of the top, so that on being exploded by the peg on striking " the ground a shower of sparks issues from the said capsule. " For this purpose the peg of the top is made to pass right through " the body of the same, being free to move up and down to a certain extent in the perforation formed in the body for this purpose; over the top of the perforation is fixed a capsule, formed " as a cylinder, with a bridge or strap passing across it at top. " Underneath this strap is placed the fusee, which is held in position by a spiral or other spring inside the capsule, the lower " end of which spring may be made to press against a pin or projection on the peg, so as to press it downwards. The upper end " of the peg is formed with points or serrations which on the peg " striking the ground and being thereby pushed up in the top " come in contact with the fusee and ignite the same by percussion. By preference a perforated plug or piston is placed over " the spring in the capsule, which piston presses the fusee against " the strap, and which may be readily depressed for inserting a " new fusee. The point of the peg may be covered with india-rubber so as to prevent it from damaging the floors or furniture."

[Printed, 4*d*. No Drawings.]

A.D. 1866, November 5.—N° 2864.

MEDD, HENRY. — (*Provisional protection not allowed.*)—Im-" provements in mounts for cartes de visite and playing cards."

These " improvements on the ordinary carte de visite mounts " and common playing cards consist in printing, impressing, " engraving, or otherwise delineating on the back of such mounts " or playing cards the arms, crests, mottos, monograms, or other " designs representing the armorial bearings or monogrammic " devices of the person, family, or personage represented by the " likeness in the carte de visite, or to whom the playing cards " belong. Such may be represented in their heraldic colours, " being printed or executed by hand."

[*Printed, 4d. No Drawings.*]

A.D. 1866, November 7.—N° 2897.

CAVELL, John Scott.—(*Provisional protection only.*)—"Improvements in the construction of automaton figures or toys."

The figures are formed "of paper, pasteboard, wood, metal, " india-rubber, gutta percha, or other suitable material, each " limb being made separately and united together by hinges or " joints, and when requisite by universal joints or ball sockets, " according to the motion required. The trunk and limbs of the " figure are to be made hollow for the purpose of containing a " series of wires, cords, or strings, or elastic bands with guide " pullies, and rings or loops for conducting such cords, wires, or " strings to the various limbs and for attachment thereto. At " the back of the figure an aperture is formed for the passage of " these cords or wires, and the figure is supported by a hollow " pivoted joint at the back through which the cords or wires pass; " this pivoted joint is set on a vertical tube behind the figure, " the tube being supported on a table, bench, or stage, and the " operator being concealed from view pulls the requisite cords " or wires in order to effect the desired motions of the figure."

The cords are provided with swivels, so that if the figure be revolved on its axis, the various movements of the limbs may be performed at the same time. The head may be made to rock from side to side by means of a ball joint and a short arm or lever. Slots or grooves in the bench permit the vertical tube and the figure attached thereto to have either an advancing, retreating, or lateral motion. Sliding bars and screens may be used to enable the figures to approach towards or to recede from each other.

[Printed, 4*d*. No Drawings.]

A.D. 1866, November 7.—N° 2901.

SUTTON, Charles.—"An improved toy to be actuated by " steam."

"The improved toy consists of a bulb of glass with a tubular " stem issuing from the top and having a small orifice at the " end; this instrument is suspended by means of a chain or wire " from any suitable support, and there is a swivel in the chain or " wire which allows the instrument to rotate freely; the bulb is " filled with water or liquid by warming it over the flame of a " *spirit lamp* and then plunging the point of the tubular stem in " *the water or* liquid. The instrument being thus prepared, the

" bulb is heated by the lamp until the water or liquid boils, and
" the steam then issuing from the orifice at the end of the tubular
" stem causes the instrument to rotate rapidly, the stem being
" directed in such manner that the steam issues in a line at right
" angles to the axis of the bulb, or nearly so."

The drawing shows the said toy and the stand with which it is used. A wooden base block has a bent wire projecting from it upwards; the upper end of this wire is bent into a hook to receive the ring of the above-mentioned chain. A spirit lamp is placed on the base block underneath the bulb.

[Printed, 8*d*. Drawing.]

A.D. 1866, December 3.—N° 3173.

CLARK, William.—(*A communication from Joseph de Susini.*) —(*Provisional protection only.*)—" Improvements in apparatus
" for applying and regulating motive power."

" This invention relates to utilizing the power produced by the
" tension of an elastic cord having a self-acting escapement
" regulated according to the nature of the application; this
" apparatus is chiefly applicable where but a small amount of
" power is required, and especially to give motion to mechanical
" toys, as, for instance, toy watches."

One end of an elastic cord is fixed to the free extremity of a lever that works on a pivot at the other extremity and has a projecting piece of india-rubber at its centre. The central spindle of the watch carries a pulley round which the other end of the elastic cord may be wound; the said central spindle also carries a larger pulley against the periphery of which the said piece of india-rubber is kept constantly pressed. When the cord is wound up to its greatest degree of tension, the pressure on the large pulley is greatest, and this pressure decreases " as the cord
" becomes unwound."

To wind up the said watch " the key is applied on the squared
" end of the spindle opposite to that carrying the hands." By this means the cord becomes wound upon the axis as above stated and is made to unwind itself gradually and in a self-acting manner by the pressure of the lever pad (of india-rubber or soft leather) upon the before-mentioned large pulley. The pressure on the pulley is in proportion to the tension of the india-rubber cord.

[Printed, 6*d*. Drawing.]

A.D. 1866, December 13.—N° 3278.

PEPPER, John Henry, and PICHLER, Seraphicus Francis.—(*Provisional protection only.*)—" Improved apparatus " and automatic figures capable of performing various gymnastic " feats."

In an automatic arrangement which represents a performer on the "trapèze," the swing has externally the appearance of a bar suspended by two ropes, "but the ropes are rendered stiff by " bars within." The ropes can be rocked simultaneously, and down the interior of one of them there passes a light shaft " having at its upper end a bevilled pinion gearing with a " corresponding pinion which receives its motion from a crank " handle; at the lower end of the shaft or axis contained within " the said rope is another bevilled pinion gearing with a cor- " responding pinion fixed on the bar on which the automaton " performs, so that the bar can be caused to rotate either entirely " or partially. The automaton grasps the bar firmly with its " hands and swings with the trapeze, and being jointed in " numerous parts as the bar rotates it assumes corresponding " attitudes, varying with each partial rotation of the bar."

"A skating automaton."—Underneath the skating surface magnets are moved about. The figure, having iron skates, " follows the motions of the magnets."

By similar mechanism an automaton may " walk on the under " side of a ceiling or other surface."

"An automaton to walk on a tight rope."—The rope is a slotted tube that contains screws. Nuts are attached to the feet of the figure respectively, one nut on each screw; by turning the screws alternately, the figure progresses " with a motion " resembling walking."

[Printed, 4*d*. No Drawings.]

A.D. 1866, December 15.—N° 3294.

BURROUGHES, William Henry.— (*Provisional protection only.*)— " Improvements in marking boards for billiards, pool, " bagatelle, and other such games."

The object of this invention is to render the indication of the *scores* of the above-mentioned games " plainly visible from a dis- " *tance.*" The numbered divisions or scales are formed " of

" ground glass or tinted glass in lieu of wood, as they ordinarily " are made," and a light is placed behind the said divisions so as to illuminate them. "The face of the board therefore consists " of wood to receive the sliding pointers, and of glass, over " which the ends of the pointers extend, thus shewing clearly the " number indicated on the glass scale, the top row of numbers " shew the units and the second row the tens or twenties in " the usual manner." Below these scales the inventor applies " behind the face or woodwork of the board two glass discs or " circular plates having the numbers in hundreds up to nine " hundred or a thousand radiating from their centres, these are " placed side by side, and being set on pivots may be turned by " a small milled edged button or handle as required in order to " bring the hundreds in line with an opening or space in the " board, whereby the number on the glass disc becomes visible by " its illumination. The marker may consist of a case or box " with arrangements for the reception of a lamp or flexible gas " tube, so as to render the marking board a conveniently portable " article."

[Printed, 4*d*. No Drawings.]

A.D. 1866, December 17.—N° 3312.

MOLE, CHARLES.—(*Provisional protection only.*)—" An apparatus for the more expeditious and effectual attachment of skates " to boots or shoes."

"A shallow hollow or cup" is "affixed by screws to the heel " part of the skate. In the back part of the hollow or cup" is placed "a curved strip or square or other shaped piece of " (roughened) steel, brass, or other metal (which fits into a recess), " and to which a screw is attached or loosely rivetted, the screw " being passed through a perforation at the back of the cup is " worked from the exterior thereof." In the front of the cup the inventor places "another strip of metal (curved for round " and straight for ordinary boot heels), and which is bevilled or " sharpened off to an almost cutting edge. When the skate is " to be attached to the boot, the heel of the latter is inserted into " the hollow or cup of the skate, and by turning the screw the " curved or other piece of metal at the back forces the boot heel " against the cutting edge of the opposite strip of metal, which " thereby obtains a firm grip of the front part of the boot heel,

" while at the same time the back of it is firmly held by the " roughened or spiked piece of metal behind it, a single strap " being then passed over the instep in the ordinary manner the " skate is securely affixed to the boot. Or the curved or other " shaped piece of metal at the back of the heel may be altogether " dispensed with, and in its stead the screw itself be made with " a point, so as to pierce the heel of the boot; and in order to " fit more effectually boot heels of various sizes the front strip, " bar, or curve may be made moveable by means of screws or " otherwise."

[Printed, *4d.* No Drawings.]

SUPPLEMENT.

A.D. 1772, April 7.—N° 1012. (* *)

ROWLEY, James.—" A method of making playing cards, " printed from engravings on copper after entire new designs " in oyl colours, with a peculiar kind of ink, which will bear the " leesing or polish necessary to be given to playing cards, which " no other ink known to the printers or cardmakers is capable " of. The new designs typifying the four classes of people " into which the kingdom is devided." " The first, commonly " called spades, means the nobility and military, typified by the " figure of an espontoon; second, the clergy (hearts) by the " chalice or communion cup; third, the citizens and merchants " by the diamond; and fourth (clubbs) by the trefoil or clover " grass, symbolical of the husbandmen and peasants." " The ink " with which these cards are printed from metal plates is com- " pounded of the same ingredients used in painting the common " cards, known to every manufacturer, but instead of water the " patentee mixes them in linseed oyl and allum, boiled and " calcined to a proper crisis, which can only be ascertained by " frequent experiments."

[Printed, *4d.* No Drawings. See Rolls Chapel Reports, 6th Report, p. 138.]

A.D. 1784, December 4.—N° 1458.

SAVIGNY, John Horatio.—A "method of making of skaits "and particularly for fixing them on with more ease, safety, and "expedition than hath hitherto been discovered."

[No Specification enrolled.]

A.D. 1788, February 5.—N° 1639.

WARING, Thomas.—"Certain machines for and improvements "in the manufacture of long bows, for giving greater elasticity "to the same, and for ascertaining the strength thereof."

The drawings show "a machine for making of long bows with "a greater degree of elasticity than has hitherto been practised." A beam of wood carries an upright at each extremity, the uprights being a distance apart nearly equal to the length of the bow stave; in the middle is a screw carrying a forked head that can be made to embrace the middle of the stave. The bow stave being placed in the machine, the screw is turned "till it is bent "backwards to the degree required;" the back is then glued on, and the whole remains until the glue is sufficiently hardened.

A machine is represented "for ascertaining the strength of a "bow when finished." This machine consists of an upright post carrying a rest at its upper part. The bow is placed on the rest, "and a board with four cords in the manner of a scale is to be "hung by a hook upon the bow string;" a rod "with inches "marked upon it is likewise made to rest upon the bow string by "a small hook or otherwise, and is kept in a perpendicular "situation at the top by a ring on the rest through which the "rod passes." The person using the machine then takes hold of a handle on the scale board, "and with his other hand places "weights upon the board until the bow is so far bent that the "number of inches required (in proportion to the length of the "arrow) appear on the rod parallel to the back or summit of the "bow the strength and power of which which will be ascertained "by the quantity of weight on the board or scale."

[Printed, 6*d*. Drawing.]

A.D. 1810, August 14.—N° 3371. (* *)

WHITMORE, William.—"The magnet toy, to facilitate the "teaching of children to spell, read, and cypher in any tongue,

" with ease to the teacher, pleasure to the learner, and propor-" tionate expedition."

This toy consists of a box (containing mechanism) having depicted on its upper surface " either the letters of the alphabet, " numerals, types, symbols, or musical notes, according to the " views of the teacher," arranged in a semi-circular form somewhat like the plate of a dial; an " index," revolving about the centre of the dial, carries a horse " or other captivating, whimsical, " or attractive device;" at the pleasure of the teacher the horse is made to take up any loose duplicate letter or sign laying on " another concentric, &c. exterior, semicircular, inclined rim," opposite to those on the dial, and to deposit it on a flat semicircular rim which occupies the remaining half circle to that from which the duplicates are taken; the horse also nods, shakes his head sideways, and has other motions at the will of the operator.

The horse's head is balanced by a weight concealed within the body and acted on by a string from the front of the box, passing through the hollow index centre and the leg, so that on its being pulled, the horse's head is depressed, and a magnet placed in his mouth is brought into contact with a piece of iron on the duplicate; on releasing the string the concealed balance weight raises the horse's head; another string, having its two ends projecting from the front of the box, passes round a pulley on the index axis and turns the horse round; the head is then depressed, the duplicate strikes against an upright ridge, and is deposited on the rim.

Another method of moving the horse is described and shown, in which a handle connected with a shaft and pinion moves a crown wheel on the index axis; levers, rods, and tubes give motion to the horse's head.

[Printed, 8*d*. Drawing. See Rolls Chapel Reports, 7th Report, p. 206.]

A.D. 1811, March 6.—N° 3407.

WILLIS, Abraham.—" New method of producing steel toys " of different descriptions, such as barbers' curling irons, sugar " nippers, snuffers, and other articles."

[No Specification enrolled.]

A.D. 1819, March 4.—N° 4346.

MILWARD, William.—"An improvement on skates, and in fixing the same on the feet."

This improvement "consists of attaching the skaite iron to " the shoe instead of a wooden sole, to be strapped on to the " foot as heretofore."

The said attachment is made by means of two staples fitted to the skate iron. The staple at the toe end is fitted by means of a dovetailed notch, that at the heel is fixed to the skate iron. These staples are secured to the shoe by means of two screws in each staple. A piece of plate iron is worked into the sole of the shoe, "or under the sole leather, for the purpose of holding the " screws, bolts, or rivets" of the toe staple, "and the same also " at the heel, in order to receive the screws or other fastening of " the heel staple."

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 1, p. 25; and Rolls Chapel Reports, 8th Report, p. 132.]

A.D. 1823, April 22.—N° 4782.

TYERS, Robert John.—"A machine or apparatus to be " attached to boots, shoes, or other covering for the feet, for the " purposes of travelling or pleasure."

"My apparatus consist of what I term my volitos or sub- " stitutes for the scates ordinarily used upon the ice, these being " mounted upon wheels, and are, therefore, capable of being " used upon land in a similar manner to scates upon the ice, to " perform the various evolutions and movements peculiar to the " art of scating. For this purpose it is requisite that only a " single line of wheels should be affixed to each volito, and that " in the centre of it, and also that the middle wheel should be " rather larger or greater in diameter than those on each side of " it, and that the adjoining ones again should be rather larger " than those next to them, and so on to each extremity of the " volito, or that in case of the wheels being all nearly of the same " size, they must be so placed as that their lower parts or edges " may all touch a line, which must be a portion of a circle, and " also that one wheel in each should be placed under or nearly " under the heel of the person using them."

In one case, the said wheels turn upon screwed pins that are fitted into ears, the said ears being formed on a metal frame that *is secured to the stock.*

According to another plan, the wheels may have fixed pivots that turn in holes in the sides of the frame, one of the sides being detachable to allow of the placing or displacing of the wheels.

A nose in front of the skate, and a stop at the back may be employed; either or both of these may be removable at pleasure.

[Printed, *6d.* Drawing. See London Jeurnal (*Newton's*), vol. 7, p. 20.]

A.D. 1823, October 16.—N° 4853.

CONGREVE, SIR WILLIAM.—" Various improvements in fire-" works."

1st. A parachute rocket.—" The parachute is contained in the " head of the rocket, and is connected with the firework, so that " when the head of the rocket bursts the parachute is liberated " with the firework attached to it and of course remains suspended " during the display."

The parachute and its appendages may be placed in the rear. In this case the fire issues in front and reverberates through vents opening to the rear. " This description of rocket may also be " combined with the common rocket, so as to form a double " rocket upon the same axis."

2nd. Reducing the length of the rocket stick.—Revolving planes are placed at the end of the reduced stick. If three or more revolving planes are applied to the body of the rocket, so as to project behind the vent, the stick may be altogether dispensed with.

3rd. Regulating the moment of the bursting of the rocket.—The bursting charge is connected with the rocket by means of an adjustable, rotatable, cylindrical, wooden collar, " in the circum-" ference of which various lengths of fuses are driven." The position of the collar determines the fuze which is used.

4th. " A mode of producing instantaneous fire for the discharge " of fireworks," instead of portfires.—The leader is armed with a " self-igniting paper cracker formed of fulminating silver and " powdered glass."

The composition contained in the cracker must be surrounded *with mealed pow*der made with oxymuriate of potash.

[Printed, 4d. No Drawings. See London Journal (Newton's), vol. 8, p. 63.]

A.D. 1830, January 26.—N° 5889.

COBBING, JAMES.—" Certain improvements on skaits."

These improvements consist in certain methods of attaching skate blades or irons to the soles of the boots.

In one plan, the said irons have tenons which enter into metal sockets that are firmly imbedded in the soles of the boots and into the heels thereof; screws retain the hooks from withdrawing from their sockets whilst the skates are in use.

In another mode, the irons have metal clamps firmly affixed across them; one clamp beneath the sole and the other beneath the heel of the boot. The upper ends of the clamps turn over inwards towards each other, so as to catch upon the top edges of the soles and heels, and thus fix the irons to the boots. The width of the clamps is adjustable to the size of the boot. Spring bolts fasten the heel clamps to the skate irons, and thus enable them to be placed on and taken off the boots; "or otherwise, " instead of making the clamps at the heels to detach from the " blades, by withdrawing spring bolts as aforesaid, the said " clamps may be fastened to the heels by screws screwed into " metal sockets, ingrafted into the thickness of the heel pieces, " and by withdrawing those screws the clamps can be detached " from the heels, and the skates removed from the boots or " shoes."

In the first plan, to preserve the sockets from becoming clogged with dirt or snow, when the boots are in ordinary wear, a false sole is worn; this sole has tenons that fit into the sockets, and is thereby affixed to the boot.

[Printed, 10*d*. Drawing. See London Journal (*Newton's*), vol. 1 (*conjoined series*), p. 249; and Register of Arts and Sciences, vol. 5 (*new series*), p. 100.]

A.D. 1831, January 18.—N° 6062.

RODGERS, JOHN, RODGERS, GEORGE, and FELLOWS, THOMAS, junior.—" An improved skate."

This invention consists " in making the whole of the sole of a " skate, or that part on which the foot rests (and which is " generally made of wood), of one elastic piece of tempered steel " or iron supported on flanges, either forged with the skate iron, " or made separately and attached to it, whereby all injurious " pressure from the straps is avoided, and a free action given to " the toes of the skater.'

The drawings show the steel sole plate rivetted firmly to the skate iron by means of flanges. There is a stud for the heel and a hole is cut in the hinder part of the skate iron for the heel strap. A flange at the heel of the iron supports the heel of the spring. A broad strap, firmly rivetted to the steel sole, buckles over the foot behind the toes.

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 5 (*conjoined series*), p. 331; Mechanics' Magazine, vol. 15, p. 206; and Register of Arts and Sciences vol. 6 (*new series*), p. 37.]

A.D. 1841, December 23.—Nº 9209.

BAILLIEU, WILLIAM. — "Improvements in apparatus to "expand the human chest."

[No Specification enrolled.]

A.D. 1852, December 28.—Nº 1176.

GIDMAN, Joseph.—(*Provisional protection only.*)— This invention is entitled "A skate."

A framework, varying in dimensions according to the size of the foot, carries three transverse axles, a central axle, one in front, and one behind. The external axles respectively carry one wheel, the central axle carries two wheels. The hinder end or heel of the framework is carried down so as to form a stop. The said framework is attached to the sole of the skate by four steel pillars, which are fastened to the sole but pass freely through the fore and hind axles, being however prevented from separating therefrom by a suitably shaped piece of steel. "Between the "sole and the fore axle and hind one" four springs are placed. "At each end of the springs will be a hole through which a "pillar is to pass."

The skate is fastened to the foot by means of certain holes in the sole and certain rings connected therewith, a strap and buckle being passed through the said holes and rings. The heel of the sole carries a vertical piece of steel, the top part of which is bound with leather.

Instead of constructing each of the said wheels with a solid nave, rollers are inserted between the wheel and its axle, so as to reduce friction. Two scotches or stops are placed between the two centre wheels; the fore wheel is thus prevented "from moving "round at the time the stride is taken." The fore wheel is rather smaller than the other three.

[Printed, 1s. Drawings.]

A.D. 1854, February 6.—N° 287. (* *)

MEERE, Auguste Louis Nicolas Comte Vander.—(*A communication.*)—“ The manufacture of artificial whalebone, or a “ substance capable of being employed as a substitute for whalebone and tortoiseshell.”

This invention relates chiefly to improvements in treating horn to render “ it flexible and elastic like ordinary whalebone.” This may be effected by steeping for several days the horn in water containing five per cent. of “ glycerine,” or in water alone which has “ become putrid and ammoniacal,” and afterwards in a “ bath composed of three quarts of nitric acid of commerce, “ and two quarts of pyroligneous acid of commerce, and twelve “ pounds and a half of tannin, and five pounds of bitartrate of “ potash and five pounds of sulphate of zinc, dissolved and “ mixed with twenty-five gallons of water.”

“ Vinegar may be substituted for the pyroligneous acid, and “ white wine for the bitartrate of potash. Or, in lieu of this bath, “ the horn may be immersed for several days in a hot or cold “ bath containing animal matter, such as a solution of gelatine or “ glue, or the water in which tripe has been boiled, &c.” Horn so treated is rendered pliable and ductile and may by pressure and heat be formed into various useful shapes. “ It may be stained “ black by means of a stain prepared by boiling together in water “ logwood, fustic, and sulphate of iron, and adding eight or ten “ drops of nitric acid to twenty gallons of the liquid;” “and “ various other stains may be employed, as in straining ordinary “ horn and ivory and other substances.”

It is stated that horn so treated is well adapted (among other things) for chessmen and draughts.

[Printed, 4*d*. No Drawings.]

A.D. 1854, February 20.—N° 404.

TOWERS, Thomas.—“ Certain improvements in ‘marking- “ ‘ boards ’ used in connection with billiard and bagatelle tables, “ for registering and indicating the number of games played.”

The apparatus consists of two dials or discs, each having spaces or apertures through which figures are visible, and each devoted to one party in a game. Twenty-five apertures are arranged in the circumference of the disc, and a rectangular opening is on the face of the disc under the centre. An index hand is in front of each dial plate. When the index hand has made a circuit round the disc, thereby showing twenty-five, a single toothed wheel actuates a wheel (by one tooth) that registers up to 1,000 by quarter-hundreds (in the said rectangular opening), and the numbers in the circumferential apertures are then changed by hand. The foregoing is intended to register the points in one game.

To indicate the number of games played, an opening between the discs is used, and may be kept, under lock and key, from public view. The numbers that appear in this opening are actuated by wheelwork that is worked by a projecting piece connected with the index axis. In this manner the score of all games played up to 250,000 may be indicated.

[Printed, 8*d*. Drawing.]

A.D. 1854, April 3.—N° 759. (* *)

BOBŒUF, Pierre Alexis Francisse. —(*Provisional protection only.*)—" The application of electricity and fixed or moveable " aerostation to military strategy and pyrotechny."

The only reference to the subject of the present series is contained in the following claim :—

" 3rd, in the isolated, simultaneous, and instantaneous inflam- " mation of the explosive matters used in pyrotechny by means " of the electric battery."

[Printed, 4*d*. No Drawings.]

A.D. 1854, June 22.—N° 1367. (* *)

YATES, Thomas Chadwick.—(*Provisional protection only.*)— " Improvements in wickets for the game of cricket."

This invention " consists in connecting the three stumps forming " part of the wicket to a cast iron or other stand by means of " springs of vulcanized india rubber or other suitable material, " in such wise that when the stand is fixed in the ground, and " the stumps are struck by by the cricket ball or otherwise, they " regain their perpendicular positions. The bales or cross pieces " forming the upper part of the wicket are required as before, but " they are attached to the stumps by a band of india rubber or " other material." The object is "to save the time and labor " required to replace the stumps in the ground after they have " been struck down, and to ensure a uniform distance between

" the stumps; also to to prevent the bales being thrown to the " ground."

[Printed, 4*d*. No Drawings.]

A.D. 1854, December 22.—N° 2707.

LOYSEL, EDWARD. — " A new game, combining chance and " skill, and the apparatus to be used therewith."

" The chivalric game of tournoy " " is intended to be played " by two persons, with twelve pieces on a board of thirty-six " squares." " The six pieces belonging to each player are " denominated—1, the queen; 2, the chevalier; 3, the conné- " table [constable?]; 4, the herald; 5, the page; and, 6, the " dwarf."

At each move, the piece to be moved is denoted by an " indi- " cator," which consists of a wheel rotating on a vertical pivot in the centre of a cup in which an ivory ball may be set in motion. On the wheel being rotated by hand, and after three or four rotations, the ball drops into one of the six recesses; the name on the flap above the recess indicates the piece the player has to move.

Each piece has a numerical value attached to it. The object of the player is, by means of the moves allotted to each piece, to capture the adversary's pieces, " so as to reduce the total value of " the adversary's means of offence and defence, until all the " pieces of one side are captured. The conqueror will then count " up the numerical value of the pieces remaining to him, and will " score so many points in his favor." The scoring proceeds until the required number of points are gained by one of the players.

Each player is at liberty to exercise his skill in placing the piece to be moved.

A scoring apparatus consists of two dials (one to each player), each having on its circumference the figures from 0 to 9. " Each " dial has three hands, one for units, one for tens, and one for " hundreds.

[Printed, 1*s*. 2*d*. Drawings.]

A.D. 1855, October 5.—N° 2232. (* *)

LEPAGE, FRANÇOIS CHARLES. — " A new composition or " new compositions of materials which may be employed as a " *substitute for* wood, leather, bone, metal, and other hard or

" plastic substances, and the method of manufacturing the same."

The composition is a combination of sawdust and albumen; the former may be mixed "with vegetable, mineral, or metallic " powders," and the latter with any other glutinous or gelatinous substance, such as gelatine or size, or with albuminous salts.

The sawdust is soaked in albumen "slightly diluted and " liquefied by water or otherwise;" then it is well dried and subjected to pressure in a hydraulic press or by any suitable means. The substance is afterwards moulded by being forced into moulds, which are kept heated during the process "by a " steam jacket" or other means, and as soon as the moulding is completed, the moulds are suddenly cooled by immersing them into cold water or by pouring cold water over them.

The new composition may be applied to the manufacture of a variety of articles, and amongst them to chessmen.

[Printed, 6*d*. Drawing.]

A.D. 1856, February 16.—N° 401.

PARKER, Frederick.—(*Provisional protection only.*)—" Im-" proved apparatus for affording exercise to the human body."

" This invention consists in connecting together certain levers, " treddles, wheels, springs, and weights, and combining them " with a seat into an apparatus, by the use of which persons " sitting thereon may avail themselves of similar exercise in a " room to that obtained on horseback out of doors. Another " form of construction of apparatus, according to this invention, " consists in so constructing and arranging the several parts as " that they have to be operated upon by persons, either in a " standing or sitting posture, with the feet and hands, so as to " bring as much as possible of the muscular system into action " at one time; and further, by applying the power thus exerted " to the turning of a wheel, with vanes or fans fixed around the " same, the air may be disturbed, and the salubrity of the atmo-" sphere in the room improved. The above apparatus may " either be fixed in a room, or it may be used out of doors as " a locomotive vehicle, in which last case it would require to be " *mounted* upon wheels."

[*Printed*, 4*d*. No Drawings.]

A.D. 1858, April 14.—N° 806. (* *)

GORHAM, John.—" Improvements in optical instruments, by " the revolution of which various designs or patterns may be " produced to the eye."

This invention consists of combining with " colour tops or " wheels " " the use of a disc with a hole in the centre sufficiently large to cause it to fit loosely on to the spindle of the " top or wheel, but only so large as to admit of its vibrating to " a small extent, such disc having appended at or near its " circumference a light weight for the purpose of slightly retarding its motion with the top or wheel, and causing it to vibrate " as required on the spindle of the same, on which it is placed " during the revolution of the top or wheel. Thus the disc " when placed on the spindle is made to revolve about the same " axis and in the same direction as the wheel, and in a plane " parallel therewith, but at a short distance from it, and with " a motion retarded as to its velocity; while as to its direction, the motion is broken up or converted into a series of " rapid jerks or isochronous vibrations. This moveable disc is " blackened on its upper surface, and has a pattern or device " cut completely through and out of its substance, so as to " admit of the colours on the surface of the ordinary colour top " or wheel below being seen through such pattern or device " when viewed from above. It results from this arrangement, " that if the colour top or wheel rotates vertically, then the " vibrating disc occupies a position in front of the wheel that " is between it and the eye in all cases."

[Printed, 4*d*. No Drawings.]

A.D. 1858, April 24.—N° 908.

LILLYWHITE, Frederick, and WISDEN, John.—" An improved apparatus for projecting cricket balls or other similar " articles."

The object of this invention is to enable any person to discharge a ball or other missile so as to reach or hit a given mark with unerring precision. The apparatus is called a " catapulta ;" it may be used in the game of cricket " as a medium for correct " bowling, enabling players to practise batting where no efficient " bowling is to be obtained," the " apparatus performing every " phase of bowling as the operator may direct, the ball rising

" and falling, or being projected direct at the wicket, as if " delivered from the hand."

A vertical framing, of wood or any suitable material, "formed " hollow to receive an inner framing, rests and revolves (or par- " tially so) on a block armed with a spike to be inserted in the " ground. This outer framing is supported by two rods, also to " be fixed in the ground. An inner framing strengthened by " blocks above and below, occupies the inner area of the framing " first mentioned. A spring projects both from the top and " bottom of the inner framing. Two lines of catgut (or other " strong material) pass from the ends of these springs to a centre " socket made to hold the ball. To the back of the socket a " strap is attached, which loops on to a hook or trigger apparatus, " moved by a lever handle at the back of the vertical framing. The " ball being placed in the socket, the inner framing is adjusted, " the lever handle lowered, drawing the socket back towards the " framing (as a bow string); the detent is then detached, and the " ball flies to the mark desired."

[Printed, 10*d*. Drawing.]

A.D. 1859, February 25.—N° 516. (* *)

PEOVER, GEORGE.—(*Provisional protection only.*)—" An im- " proved optical instrument, being an improvement upon the " kaleidoscope."

The said instrument is denominated a "chromeidoscope," and " consists of a tube having vertical reflecting mirrors arranged " angularly therein as in the kaleidoscope, an eye-piece being " placed at one end of the tube, and the object at the other " end."

In this instrument "the object or the pieces composing the " same are arranged around or attached to a rotating shaft or " spindle mounted horizontally in a box or chamber on which " the tube of the instrument is secured." The object is illuminated either by direct light or by reflectors, and the spindle may project through slots in the ends of the box, so as "to admit of " the object being moved laterally under the eye-piece," and thus "give variety to the image." For this purpose the object may also be moveable "backward or forward."

"*A rising* and falling motion may also be imparted to the " *object*."

A pair of glass prisms may be adapted "to the object end of "the reflecting tube," so as to decompose the light "whereby "the image is seen."

Sometimes the reflecting tube may be capable of rotation on its axis.

Prisms may be adapted to the eye-piece end of the instrument, so that more than one person can see the object at once.

Mechanical means may be employed to communicate slow rotary motion to the reflecting tube or tubes and to the object.

[Printed, 4*d*. No Drawings.]

A.D. 1860, January 14.—N° 107.

SMITH, Willoughby.—"Improvements in transferring de-"signs, and in ornamenting glass and other surfaces, also in "the manufacture of slides for magic lanterns."

A print, either coloured or otherwise, is taken; or a design otherwise produced on paper or other similar material may be employed. The surface of the print or design is coated with collodion; when the collodion is set and hard, the paper on which the design was originally produced is washed off; the ink or colour "will then be found firmly attached to the film of collo-"dion." In ornamenting glass, the said impressed film, together with varnish or cement, is laid on a sheet of glass or on the surface to be ornamented, to which on drying it will firmly adhere. "When the film of collodion to which the design has been "transferred, is to be employed as a slide for a magic lantern, it "may either be mounted on glass or between two glasses, or "it may be mounted alone in a suitable frame." In some cases, in order to render the film of collodion tough, the inventor mixes therewith (by boiling) castor oil; if greater transparency be required, Canada balsam is added to the collodion and incorporated therewith also by the process of boiling.

[Printed 4*d*. No Drawings.]

A.D. 1860, February 27.—N° 537. (* *)

DESVIGNES, Peter Hubert.—"Improvements in apparatuses "for exhibiting photographic, stereoscopic, and other pictures, "models, figures, and designs."

The object of this invention "is to show in one apparatus a "series of stereoscopic or other representations or models taken

" in different views, as if the same or the things represented were " in motion."

The apparatus " are cylindrical or polygonal, and are caused to " rotate either vertically or horizontally."

To exhibit stereoscopic views, a certain number of them are placed within a cylinder whose periphery " has formed across it as " many slots as there are views." The glasses for viewing the pictures are " held stationary outside of the periphery of the " cylinder." " The views may represent, for instance, a steam " engine, and each view must be taken when the engine is at " different parts of its stroke. The views being placed in the said " cylinder, and the cylinder being caused to rotate, will show to " the eye the steam engine as if in actual movement in all its " parts."

To exhibit models and drawings, they are arranged " round a " cylinder placed and caused to rotate horizontally; vertical slots " are made in the periphery to see through." In some cases a sort of fixed camera, in combination with a cylinder and disc or discs, is used.

Endless bands and other combinations of moving slots and pictures are described and shown in detail; the theory of these apparatus is amply set forth, and methods of varying the optical effects are fully stated.

Various methods of shading extraneous objects from the observer, and of illuminating the views or figures under examination, are described. Electric sparks, elicited at the proper time, may be used to make every change of figure " visible at its proper time " and place."

[Printed, 1*s*. Drawing.]

A.D. 1861, March 23.—N° 735.

JOHNSON, JOHN HENRY.—(*A communication from Frederick Ashley.*)—" An improved skating chair."

" This invention relates to a peculiar construction and arrange- " ment of chair to be pushed along the ice after the manner of " a sledge, and consists in constructing a chair with a folding " frame and flexible back and seat, so that the whole may be " closed up and made easily portable for being carried, and may " *be opened out* when required for use. At the bottom of each " *leg or support* is fitted in any convenient manner a runner or

" skate iron, which may be made to turn up parallel to the legs
" of the chair when packed for transport."

The drawings represent a skating chair as described above. The supports for the back and the main side pieces are in one piece. The other side pieces are attached to the main side pieces by bolts; they can thus be turned on a hinge so as to form the back legs. Cross braces connect the sides; they are made with hinged joints, so as to admit of the frame being closed laterally. The seat is made of webbing attached to the arms, and the back is composed of similar material. The runners or skates move loosely on pins on the lower extremities of the legs; for packing, the skates can be turned longitudinally.

Another chair is shown, in which the upper parts of the main side pieces are hinged and retained by straps in an easy inclined position suitable for the back. In place of being made of flexible material, the back may be made of wood and movable, being connected to the main side pieces or supports by means of a stud and slot attachment.

The invention also consists in " the application of short runners
" or skate irons to chairs of the ordinary construction."

[Printed, 6*d*. Drawing.]

A.D. 1861, June 11.—N° 1490. (* *)

SMALL, THOMAS OSWALD.—(*Provisional protection only.*)—
" An improved optical instrument for the use of designers and
" others."

The instrument or " polyeidoscope " " consists principally of a
" small box or case lighted by a moveable glass slide so arranged
" as to subdue or give brilliancy to the designs. In this case
" is mounted a roller capable of revolving and also of sliding to
" and fro upon a central rod or wire. This roller may be either
" white or black or colored, and is studded all over with small
" pieces of metal, glass, silk, artificial flowers, beads, jewels, or
" any other material used in any of the above trades. In the
" front of the case opposite to this roller is placed a tube contain-
" ing prismatic reflectors similar to an ordinary kaleidoscope, and
" behind the roller is a radiated disc, each radial division being of
" a different color or shade.

" Upon looking through the eye piece of the tube, and turning
" round the roller (by means of a button outside the case) the
" most beautiful designs will appear in rapid succession, any one

" of which may be arrested till copied or reproduced, and by " turning round the radiated disc the effect of variously colored " backgrounds on the same design may be tried; by sliding the " roller to and fro any part of the roller may be brought to view, " and by turning round the tube the form of the design may be " changed, so that an almost endless variety of designs and effects " may be thereby produced."

[Printed, 4*d*. No Drawings.]

A.D. 1861, November 4.—N° 2768.

HORTON, George.—" An improved construction of skate."

"The object of this invention is to construct skates which " shall afford great facilities for attachment to the foot, and may " be manufactured at small cost. To this end I make the sole " of the skate of sheet metal (preferring iron or steel), and I turn " up the rear end to form an abutment for the heel of the boot " to which the skate is to be secured. The skate iron is secured " to the metal sole by rivetting, or by screws, or other suitable " attachment; but I prefer puncturing holes in the sole to receive " projections from the upper side of the skate iron, and then by " hammering on to the projections to clench the sole and skate " iron together. From the upper face of the sole project pins for " holding fast to the sole and heel of the wearer's boot, and I " provide three strap pieces with buckles for securing the skate " to the wearer's foot. Thus a strap piece secured by rivets to " the heel of the skate passes round his ankle, another near the " other end of the skate (being slipped between the sole and " skate iron) passes over the toes, and a third (passing also " between the skate iron and metal sole) buckles over the " instep.

"The improved skate therefore requires no application of screws " or piercing of the boot heel to effect its firm attachment to the " boot, but may be readily and firmly attached thereto by means " of the straps."

[Printed, 6*d*. Drawing.]

A.D. 1861, November 12.—N° 2841.

NEWTON, William Edward.—(*A communication from Daniel Hartwell Shirley.*)—" Improvements in skates."

"*This invention* consists in a new mode of fastening a skate " *to the boot or* shoe, whereby the skate is rigidly held in its

" place by means of a longitudinal binding force (that is, in the
" direction of its length) exerted upon the boot or shoe, and in
" such a manner as to avoid any wrenching of the sole. This
" result is effected by means of a moveable clamp either at the
" toe or heel, or both, which can be moved forward and back,
" and held at any desired point so as to be engaged with or dis-
" engaged from the boot or shoe, the toe piece being so con-
" structed and so attached to the skate, as to slightly lap over
" the toe of the boot or shoe, and form a bearing for the foot
" to press against, and prevent the skate from dropping at the
" toe."

The drawings show a skate with a body of cast metal and of penwork construction; the toe cap is a fixture, and the heel carries an adjustable heel piece. Spikes or prongs project from a recess which is formed in the metal of the skate to receive the heel of the boot; these prongs project horizontally inwards, and may be drawn into the front of the heel by means of a screw acting longitudinally, the head of the screw gripping the back of the heel.

In a modification of the above plan, the lip of a sliding heel piece enters a recess formed permanently in the heel of the boot by means of a semicircular piece of metal attached thereto. Instead of the semicircular piece of metal a button with a slot may be used. In another modification, a raised lip upon the upper portion of the heel of the skate frame may be made adjustable against the heel of the boot, also pushing in the front prongs by means of a screw.

[Printed, 8*d*. Drawing.]

A.D. 1862, January 8.—N° 53.

PILKINGTON, CHARLES, and PILKINGTON, THOMAS.—" Improvements in skates."

" The invention consists of a metallic skate composed of any
" suitable description of metal, such as iron, steel, tin. zinc, brass,
" german silver, or other metal, or combination of two or more
" metals, either in alloy or otherwise. The form of the body of
" the skate is stamped out or raised by dies in the ordinary form
" of the skate clog as made in wood. The sole is then similarly
" stamped and soldered on. Any description of fancy ornament
" may be added, so that it may form a very handsome appendage
" to the boot at the same time that it is quite free from he

" danger of breakage or splitting, to which the ordinary wooden-" soled skates are liable."

The holes in the body of the skate " for the straps to attach the " skate to the foot are lined with thin sheet brass or other metal, " also soldered so as to prevent any water or other matter from " getting into the body of the clog." The lining the strap holes of skate clogs with thin sheet metal is not expressly stated in the Provisional Specification.

"The skate iron is attached to the clog by screws in the usual " manner."

"The metallic skate clogs may be either left hollow or they " may be filled up inside with any suitable light solid material as " may be preferred."

[Printed, 8*d*. Drawing.]

A.D. 1862, January 28.—N° 214.

TREPPASS, HENRY HUGHES.—"Improvements in the con" struction, use, and employment of the kaleidoscope."

The object box is open and of the shape of a hopper, thus allowing re-arrangement or change of the objects observed. An opening for slides, between the reflecting tube and the object box, enables pasteboard slides or coloured glass to be used in the foreground of the view from the sight hole of the instrument. A reflecting or coloured background may be employed, and a shadow slide may be passed across the opening of the box.

"The objects employed to produce the images may consist " of coloured paper, tinsel, lace, silk, or other fabrics, leaves, " flowers, feathers, shells, minerals, or any other material which " fancy may dictate."

When permanent images are required to obtain patterns for carpets, &c., plaster casts, or other suitable substances are arranged upon and attached to cards which may be placed in the instrument or withdrawn at pleasure. To vary the images the cards may have a slow rotary motion, " thereby to obtain the most " approved images of the series."

An image projected by lenses in connection with the instrument may be photographed, or may be copied by hand.

The instrument may be constructed of tin, papier mâché, or any other suitable material; it may be plain or ornamental, and may be mounted on a stand.

[Printed, 10*d*. Drawings.]

A.D. 1862, September 29.—N° 2643. (* *)

HIRSCH, Hermann.—" Improvements in apparatus for showing " combinations of colors."

"My improvements apply to apparatus for showing combi- " nations of different colors by the rapid rotation of bodies " variously tinted. I prepare discs or plates of paper, card, wood, " metal, or other suitable material, the surface of each of which " I color with various tints, and I bore two small holes through " each of these discs or plates near to its centre, and I pass " through these holes two threads, strings, or cords of convenient " length, so that their ends being tied to rings or other suitable " bodies for holding in the fingers can be held in the hands of " operator at some distance apart. By moving or swinging the " hands so as to give the discs or plates a revolving motion the " threads, strings, or cords are twisted round each other, and " then by alternately slackening and tightening them by moving " the hands near together or further apart, the threads, strings, " or cords are alternately twisted and untwisted, and give to the " discs or plates rapid rotary motion alternately in opposite " directions, so that the colors thereon appear appear to be blended " into various tints or shades of combined color."

When variations of pattern are to be produced, a piece of coloured card, which has its corners turned up, is employed. When this is placed upon the pin of a wooden centre piece made with two holes for the reception of the cord described above, the turned up angle pieces of the disc " encountering resistance from " the air cause its rotation to be retarded, and to be accompanied " by a rapid vibratory motion, which has the effect of varying the " colors and forms of the patterns produced."

[Printed, 8*d*. Drawing.]

A.D. 1862, October 4.—N° 2689.

WHICKER, George, and BLAISE, Louis.—(*Provisional protection not allowed.*)—" Improvements in skates and in the method " of securing or fastening the same."

" The object of this invention is to secure or fasten skates to " the feet in a more speedy manner than heretofore, and to detach " them as speedily by the same means. I propose to apply and " affix to the skate blade at each end thereof a flat metal mount, " the front one lying flat against the sole of the boot, and being

" provided with a slot, which is to be pushed under a stud or
' tongue let into the front portion of the boot sole, and which is
" hinged thereto somewhat similar to the ordinary 'box' for
" spurs, so as to close or shut flush with the sole when not in
" use; the hinder mount is provided with a slot which works on
" a plate fastened on the boot heel, and which plate projects from
" the heel towards the waist, so as to enter the groove in the
" mount. The whole is to be held in position by means of a pin
" attached to a spring lever, which pin passes through the slotted
" mount into the plate; thus when it is desired to disengage the
" skate from the boot, the lever has merely to be lifted by the
" thumb or finger, which draws the pin out of the plate and
" allows the slotted mount to be slid off, when the front mount
" can be also slid back and drawn from under the stud or
" tongue; the tongue can now be closed or shut, and the boot
" will have the ordinary appearance."

[Printed, 4*d*. No Drawings.]

A.D. 1862, November 4.—N° 2980.

LOGAN, THOMAS. — (*Provisional protection only.*)—" An im-
" proved kaleidoscope."

The kaleidoscope is mounted on a stand, with the eye piece upwards, so as to be capable of revolving on its axis. A reflector is attached to the said stand, and is " mounted on pivots so as to
" be capable of being placed at a suitable angle to reflect the
" light into the kaleidoscope." The tube is made to taper; inside the tube are three reflecting glasses " blacked or silvered at the
" back and arranged in an equilateral triangle. At the lower
" end of the tube are two circular glasses, one plain and the
" other ground, between which are placed loosely pieces of broken
" glass, cut stones, or other objects." The stand the inventor makes " in wood of an oval form, having two pillars, near the
" upper end of which is fixed a ring, in which the tube of the
" kaleidoscope is mounted (at an angle of about thirty degrees
" from the perpendicular) so as to be capable of revolving on its
" axis. A circular reflector of silvered glass, about three inches
" and a half diameter, is mounted on pivots attached to the
" stand in front of the pillars, and beneath the lower end of the
" kaleidoscope. The stand being placed upon a table and
" the reflector so arranged as to throw the light into the instru-

" ment; upon looking through the eye piece, and turning round " the tube slowly, the most beautiful effects are produced."

[Printed, 4*d*. No Drawings.]

A.D. 1863, January 13.—N° 102. (* *)

BOYLE, Thomas.—(*Provisional protection only.*)—"A new " apparatus for multiplying indefinitely the reflections of all " objects that are capable of being viewed in it."

"My invention consists externally of a tapering wooden box " narrow at the bottom and wide at the top or mouth, or vice " versa, formed by sides inclining outwards or inwards, as the " case may be, from the bottom at indefinite angles according to " circumstances. The circumstances on which the angles of the " sides depend are the curves of certain glasses to be fitted inside, " and which may vary according to the effect intended to be produced. The interior of this frame is fitted with reflecting " glasses varying in shape, and either flat or curved, or more or " less in number, as the case may be, and which stand towards " each other at suitable angles for producing the various effects " intended."

"A definite example of the arrangement of curves and angles " here alluded to is that of a convex reflecting bottom glass " curved to a diameter of about nine inches, fitted with four " reflecting sides standing in relation thereto, two at about five, " and two at about ten degrees of outward inclination, This " gives the effect of many hundred repetitions of reflections of any " object that is capable of being viewed in it. In front of the " open top or mouth of the apparatus there is provided a suitable " holder, removeable at pleasure, on which certain objects that " require it are placed to be viewed."

[Printed, 4*d*. No Drawings.]

A.D. 1864, June 27.—N° 1604. (* *)

ASKEW, John.—(*Letters Patent void for want of Final Specification.*)—"Improvements in the construction of go-carriages for " teaching children to walk, and giving assistance to invalids, and " for other domestic purposes."

This carriage is "manufactured in iron, brass, steel, and other " metal;" the lower rim carries "three or more upright telescopic " tubes," the bottom of each being supplied with a spiral spring

" to give elasticity to the upward part of the carriage." The tubes "have adjustable set screws to regulate the height of the " upper rim" and "joints at the top and bottom." The upper rim is constructed with a " door and provided with a safety lock " and suspension belt." The carriage moves on castors made of brass or other metal with india-rubber rollers; it is "to be " constructed with joints and set screws so that it can be taken " to pieces."

[Printed, 4*d*. No Drawings.]

A.D. 1864, July 2.—Nº 1655.

GEDGE, WILLIAM EDWARD.—(*A communication from Henri Frédéric Favre-Couvel.*)—" Improvements in the firework known " as Roman candle."

The quick match employed in this invention is manufactured with the ordinary revolving frame or " by stretching it on the " frame with tension screws " from one pin to the other, and from top to bottom. Five or six cotton threads are thus stretched, and are brushed over with a solution of spirits of wine and gum lac. The screws are then tightened, the threads are allowed to dry, and some gunpowder dust mixed into a paste is equally spread over the threads and allowed to dry. The stars used in this invention are each pierced with a large hole, so that the match may easily pass through the said hole. These new Roman candles are charged by first placing in the barrel or pasteboard tube a piece of quick match a little longer than the tube, on the top of which is adjusted a funnel, the socket of which is big enough to permit the entrance of the tube; a small measure of gunpowder is then poured in and a star passed over the head of the piece of quick match and threaded upon it until it descends to the bottom of the tube. A small measure of finely sifted sawdust is then put in, and a ramrod, pierced through the centre, is introduced into the tube by threading it on to the quick match, lowered to the bottom, " and pressed a little on the sawdust, turning the rod, " which is then withdrawn, and the same operation recommenced " until the tube or barrel is full. The Roman candle thus charged, " a band of paper is pasted or gummed on the top, which closes " *the sheath for* the communication."

[*Printed*, 1*s*. Drawing.]

A.D. 1864, July 15.—N° 1772. (* *)

CROFT, John McGrigor.—(*Provisional protection only.*)—"Improvements in shot, shells, rockets, or arrows."

Oblique grooves are proposed to be made in the surface of the projectile at the rear end to give it rotation. Spiral feathering of metal or feathers or other light elastic substance may be employed to give rotation to arrows as well as rockets.

[Printed, 4*d*. No Drawings.]

A.D. 1864, September 20.—N° 2309.

ROGERS, Henry.—(*A communication from John Forbes.*)—"Improvements in skates."

According to this invention, the runner is hinged to the heel rest or body of the skate, "so as to form a lever, which by the "aid of a spring" "or other equivalent device imparts a motion "to the sliding plate" "which in turn by the aid of diagonal "slots and pins draws together the clips on the sole and heel of "the boot simultaneously, thereby forming a complete and efficient mode for securing the skate to the boot in a very expeditious manner, and also being so arranged as to fit boots of "various sizes."

The drawings show a skate with the above-mentioned appurtenances, entirely in metal. The said sliding plate extends longitudinally from the heel, and slides in the heel rest; the spring that imparts motion to it is hinged to the runner, and, in fastening on the skate, the runner is moved upwards, thereby bringing the heel spring nearer to the stop on the heel rest and forcibly confining the heel of the boot. Two parallel and longitudinal strips are hinged to the heel rest so as to be capable of divergence horizontally or in width; these carry the sole clips, and during the upward movement of the runner on its axis, clip the sole effectively, for they are drawn together by diagonal slots in the sliding plate, suitable studs being fixed on the sole clips. The further upward movement of the runner causes a spring upon the said runner to fasten into a catch or latch attached to the sliding plate, and thus to completely fasten the skate on to the boot by one upward motion of the runner by hand.

[Printed, 1*s*. Drawings.]

A.D. 1865, January 3.—N° 13. (* *)

MASCART, Gustave.—(*Provisional protection only.*)—This "*improved* sewing machine, which is intended to serve as a

" plaything for children," makes the chain stitch. It is made entirely of metal, and "consists of a small figure lying on its " back, the legs being hollow and thrown over the head admit " of a small shaft running through them, one end of which is " fixed to the centre of a small hand wheel, and the other, which " communicates motion to the needle," has a cam. This cam works the presser foot, and a pin on it works the needle bar. The looper consists of a shaft, advanced and retired by a cam movement and a spring, with a hook at its extremity.

[Printed, 6*d.* Drawing.]

A.D. 1865, February 25.—N° 537. (* *)

ASKEW, John.—" Improvements in the construction of a portable vehicle for teaching children to walk, and giving assistance " to invalids."

The vehicle is composed of an upper and a lower rim, both of metal and by preference circular; the former is provided with an opening which is secured by a thumbscrew or a lock and key; the latter is mounted on castors rendered soundless by a covering of india-rubber or other substance. To the upper rim are pin-jointed three or more slotted tubes, and similarly fastened to the lower rim are as many tubes or rods sliding in the upper tubes and carrying each a pin which enters a slot. The sliding is retarded by springs coiled round the rods, and the height of the vehicle is regulated by thumbscrews and collars at the lower end of the outer tubes.

[Printed, 8*d.* Drawing.]

A.D. 1865, April 4.—N° 952. (* *)

CLARK, William.—(*A communication from William Davis Winsor.*)—" Machine for rounding and polishing shot, shell, and " other balls or spheres."

Four " longitudinally sliding rotary mandrils," or a greater or less number, are mounted in a cast-iron frame made in the form of a cross. The mandrils radiate " from a common centre, and " are provided with chucks at their inner ends, in combination " with suitable mechanism to force these chucks alternately up " against the ball to be turned or ground, and with a milling " tool or grinding wheel, in such a manner that two of the " chucks will clamp the ball at a time, and the ball is thereby

" turned in either direction, while the grinding wheel or milling " tool is held in contact with the surface of the ball by one or " more screws or by an adjustable weight." The chucks are so shaped " as to grasp the general surface of the ball," and not be affected in position by inequalities on its surface.

[Printed, 1*s*. Drawing.]

A.D. 1865, April 27.—N° 1181.

FELTHAM, Joseph Frederick.—" An improvement in mallets " used in the game of croquet and other similar games."

The object of this invention " is to provide a soft face to the " mallet in order to prevent injury to the ball on being struck by " it, at the same time to increase the wear of the mallet and " prevent the jar on the ball being struck to the hand and arm " of the player."

This invention consists " in covering both faces of the mallet " with a soft material or substance, by preference with stout " leather blocked to the shape of the face of the mallet and " extending round the sides. The edges of the leather are " covered by or held in a metal collar, and the whole secured by " pins or nails, or the collar may be dispensed with. Instead of " leather, vulcanized caoutchouc, gutta percha, or other like suitable material may be used." When using cork, the inventor fits it in a ring round the face of the mallet; he also sometimes fits " a block of vulcanized rubber in the same way, the ring " being tapered to prevent the block flying out."

The drawings show a mallet with both faces covered with leather, also a mallet with cork or vulcanized rubber secured to the faces of the mallet.

In some cases mallets are made with only one soft face.

[Printed, 8*d*. Drawing.]

A.D. 1865, April 29.—N° 1196.

GAMMON, Charles.—(*Provisional protection only.*)—" Im- " provements in tablets, tickets, or instruments to be used when " drawing lots and prizes, and for such like purposes."

Instead of using the ordinary pieces or strips of paper or cardboard, folded or otherwise, the inventor proposes " to employ " tablets, tickets, or instruments composed of two discs or " tablets of metal, ivory, slate, cardboard, or other suitable

" material, either hinged or pin-jointed together. On the " adjacent surfaces of the discs or tablets of which such instruments are composed the numbers of a lottery, the numbers of " horses, or other desired signs or marks may be engraved, " printed, stamped, or indicated in other suitable manner." In some cases the inventor unites " the discs or tablets together by " means of a common eyelet hole in such manner that the discs " or tablets may be capable of turning upon the eyelet hole as " upon a pin joint.

" Another mode of constructing such instruments is to stamp " or otherwise form one of the tablets or discs of which they are " composed with flanges or ears turned up in such manner that " the other tablet or disc may slide within such flanges or ears, " stops being provided if desired to prevent the two tablets or " discs being separated the one from the other.

" Another mode of constructing such tablets, tickets, or instruments is to print or otherwise indicate the number or other " desired mark or sign upon cardboard or paper, which is then " folded and afterwards secured by an eyelet hole or by a piece " of paper or card pasted or gummed over the edges thereof, or " the edges thereof may be secured in other suitable manner."

[Printed, 4*d*. No Drawings.]

A.D. 1865, May 1.—Nº 1214.

JONES, WALTER THOMAS WHITMORE.—(*Provisional protection only.*)—" An improved croquet stand."

Near each end of the base board, and in the centre of the width thereof, a standard is fixed. "These standards have hooks " on each side of them, and the number of hooks on each " standard is equal to the number of mallets in the set (usually " eight) and the hooks are arranged four on each side of the " standard. The mallets are held in a horizontal position, " being supported at each end by the hooks. The heads of the " mallets are arranged four at one end and four at the other. " At each standard the heads are placed all at the same side, " and the distance between the hooks is just sufficient to keep " the heads of the mallets clear the one of the other as they lie " flat. The balls are placed in a row along the centre line of " the base, and the handles of the mallets on either side serve " to keep them in their places. The starting pins are carried " on supports at the inner sides of the standards; they lie

" horizontally, and between the two tiers of mallets. For the
" hoops two rows of holes are formed, one along each side of
" the base board, and the hoops are arranged in two straight
" lines along each side of the base; one of the end hoops of
" each line comes close to the mallet heads, and serves as a
" stop to prevent the mallets sliding longitudinally in the hooks
" which support them. In the centre of the base a handle is
" fitted, by which the stand can be carried from place to place.
" For travelling the whole is enclosed with a cover of wood
" fitting on to the base. The handle projects through a hole
" in the top of the cover and is available when the cover is on."

[Printed, *4d.* No Drawings.]

A.D. 1865, June 12.—N° 1588. (* *)

BONELLI, Gaetan.—"A new or improved method of obtain-
" ing or producing optical illusions."

" It is a well-known fact, based on certain optical conditions,
" and by the use of an instrument known as a phenakistoscope
" that an appearance of motion or animation may be given
" to pictures or subjects that have been expressly drawn or
" photographed for the purpose. The phenakistoscopic apparatus
" or instrument being known it will not be necessary to state
" how the pictures are arranged to produce the optical illusions,
" it will be sufficient to say that an identical result will be
" obtained with images or pictures of small size and even
" reduced to a microscopic scale if to each of the images or
" pictures a lens is applied. It is only by the application of as
" many lenses as there are images on the disc and not by the
" successive passage of all the images under a single lens that
" the effect will be obtained. Thus if a disc carries sixteen
" images as many lenses or magnifying apparatus would be
" necessary, which receive a rotary motion in the same direction
" as the images before which each lens will be respectively
" placed."

" The pictures or images thus reduced enable me to construct
" phenakistoscopic apparatus whether simple or stereoscopic, of
" sizes and shapes not hitherto done, and thereby forming a
" novel application of microscopic photography."

In the Provisional Specification the method of making objects appear animated is stated to be by placing the pictures upon a small rotating disc, " each picture is brought in front of a lens

" or magnifying glass, whereby the statue or group appears to " the eye in motion in all the different positions in which it is " represented, and in an apparatus of very small or limited " dimensions."

[Printed, 4*d*. No Drawings.]

A.D. 1865, August 2.—N° 1993.

FORD, Alfred.—(*Provisional protection only.*)—" An improved " method of forming india-rubber, gutta percha, or such like " balls."

One of the said substances, either alone or in combination, is formed into rolls varying in diameter according to the size of the ball to be produced. The rolls are then subjected " to the " action of a machine similar in construction, only varying in " size and strength, to the pill machines at present employed by " chemists for rolling out their masses into pills."

The sliding or hand machine consists of two plates of metal, each having longitudinal grooves which are semicircular in section; when one of these is placed on the other, each pair of grooves (one from each plate) forms a cylindrical tube or flute. The under plate is fixed, the upper one carries suitable handles; the back of the upper plate enables the operator to roll out the mass into the required length, and on placing the same between the grooves, the pills may be rolled out in number corresponding to the flutes, by a sliding motion imparted to the upper plate. In the rotary machine fluted rollers are used instead of grooved plates, one of which moves faster than the other, so as to secure a friction action. " These rollers are set in motion by means of a " treddell or other convenient gear, and the mass having been " rolled out as before is placed within the gripe of the rollers, " which being set in motion gives the required form to the pill." By enlarging the size of the grooves in these machines, and strengthening them, the inventor makes them applicable to the production of india-rubber or such like balls.

[Printed, 4*d*. No Drawings.]

A.D. 1865, September 7.—N° 2293.

TOLHAUSEN, Frederick.—(*A communication from Frederic Barnett and Charles Albert Roussille.*)—" A new firework, pro- " *ducing* instantaneously the forms of serpents and other forms " *of a like* nature."

"This firework is composed of a substance, which, on being "burnt, developes itself into a snake-like or dendrical tortuous "form, producing an extraordinary effect. The matter I use for "this purpose is the sulpho-cyanide of mercury, which I obtain "by ordinary and known means. This matter being prepared "and well dried, I form or mould it into cones or any other convenient shape, which by preference I cover with tin foil or any "other matter answering the same purpose. In some cases I "shall manufacture these objects in various shapes and without "enveloping them in an external covering. When these objects "are ready for use, light by the ignition of a match or any other "description of flame being applied to the summit of the cones "or to any other point that shall be indicated in any of the "various forms, will cause the immediate developement of the "imitation serpents or other similar forms."

[Printed, 4*d*. No Drawings.]

A.D. 1865, November 1.—N° 2815. (* *)

SOLOMONS, SAMUEL.—"Improvements in transparent slides "for magic lanterns and other similar purposes."

This invention relates chiefly to the application of chromolithography to the printing of transparent slides for the magic lantern, the colours that are used for the purpose being "like "those employed in printing transparent slides by hand or such "other colors as are equally transparent."

"In one of the methods employed by me, I print with such "transparent colors upon sheets of colorless gelatine or other "suitable transparent material, and I then mount such transparent prints between or upon thin sheets or plates of glass in "a suitable metal, wooden, or other frame; or I print the subject "by the chromo-lithographic process, as aforesaid, in transparent "colors on what is ordinarily called transfer paper, or other "suitable material having a prepared surface consisting of a "suitable soluble substance which will allow of the design printed "upon it being removed and transferred on to a sheet of glass "by liquifying or dissolving the surface. Having printed the "design or subject upon a prepared surface, I then transfer it to "a suitable sheet of glass, and afterwards varnish and mount it "in a suitable frame. In point of economy the latter mode of "printing and finishing transparent slides will be found preferable "to that above described."

[Printed, 4d. No Drawings.]

A.D. 1865, December 28.—Nº 3359.

OPPENHEIM, Ernest.—(*A communication from Jean Baptiste Ferdinand Fredureau and Henri de Chavannes.*)—(*Provisional protection only.*)—" A new kind of fireworks of a non-explosible and " non-offensive nature fit to be used in drawing rooms."

This invention relates to the production of coloured flames. For this purpose a mixture is made of resins or resinous gums " with sawdust, powdered charcoal, farina, dextrine, or lycopo- " dium powder with chlorates or nitrates;" to this mixture the substances usually employed in fireworks can be added. A mixture of powdered gum lac or shellac, with dessicated nitrate of strontium, may be used to obtain red flames. Chlorate of strontium, substituted for the nitrate, gives greater activity to the flame; dessiccated chlorate of potassium added to the first-named mixture has a similar effect.

"The various other colours are imparted to the flames by " means of the substances known to the firework makers. " Xyloidine and gun cotton, which fuse without producing any " explosion, can also be used in the manufacture of this new " kind of fireworks, which is to be called the 'Indian fire,' " and which can be put under any shape or form whatsoever. " By placing a small cylinder of sulphocyanide of mercury " in the center of a small cartridge filled with this 'Indian " 'fire' the voluminous and coiled appearance of the ashes as it " issues from the coloured flames will produce a very fantastic " display."

[Printed, 4*d*. No Drawings.]

A.D. 1866, January 31.—Nº 309. (* *)

DEMBINSKY, Alexander.—(*Provisional protection only.*)— " An improved composition for burning in lamps and otherwise, " the residuum therefrom being applicable for use in fireworks " and for other purposes."

This consists in taking " any kind of oils or spirits " and impregnating " them by distilling, boiling, or otherwise with nitrate " of potash, sal ammoniac, and magnesia." The proportions of these ingredients " will vary very considerably according to the " nature of the oil or spirit, but the following may be given as " an example:—24 parts of oil or spirit, 2 of nitrate of potash, " 1 of sal ammoniac, 1 of magnesia." This composition produces no smoke or smell, is " inexplosive, cheap," &c. When burnt it leaves a residue which may be used for the manufacture of fireworks, signal lights, and " as a substitute for gunpowder."

[Printed, *4d.* No Drawings.]

A.D. 1866, October 3.—N° 2550. (* *)

WRENCH, John Holmes.—(*Provisional protection only.*)—" Apparatus adapted to the representation of opaque objects to " an enlarged scale."

" Majic lanterns are means commonly employed for the " magnified representation, upon screens, of various objects, but " their use as hitherto constructed is for the most part limited to " the representation of transparent objects, and the purpose of " the invention is to obtain corresponding advantages in the " representation of opaque objects. For this purpose the object " to be exhibited is placed in a close box or chamber opposite to " focussing glasses such as used in magic lanterns or for such " like purposes and so that the rays of light thrown upon the " object may pass through such focussing glasses on to any " suitable screen or receiver, the distance of which would be " regulated as is usual when using magic lantern apparatus. " Powerful light is thrown upon the object to be represented as " it is supported in the close box or chamber by means of oxy- " hydrogen, oxycalcium, or other suitable light in lanterns or " chambers which may be of the character of magic lanterns, " but provided only with single or compound condensing glasses. " These lights are placed in angular directions on each side or " surface of the focussing glass so as to concentrate their light " in the close box or chamber equally on the object to be " represented."

[Printed, *4d.* No Drawings.]

A.D. 1866, November 27.—N° 3116. (* *)

FOURNET, Auguste, and NADAUD, Octave.—" A magic " camera."

" The object of this invention is to construct a magic camera " to show on a ground glass a magnified image of a picture. " The camera is composed of two parts. The first part is a globe " or sphere made of brass, tin, wood, or any other material with " an opening through the top and bottom to allow of a lamp, " candle, or other kind of light being put inside the globe, the

" bottom of the globe being by preference arranged to rest on
" the socket of the lamp or other kind of lighting apparatus
" employed. Through the side of the globe a round hole is
" formed in front of which is a slide in which the picture is
" placed, and adapted to the slide is a tube, inside of which
" are two lenses of a magnifying power of from four to twenty
" times or more. The second part is a camera equally made of
" brass, tin, wood, or other suitable material, the back end of
" this camera is connected with the globe by a tube into which
" the tube projecting from the globe is inserted. The face or
" front of the camera is closed by a ground glass, on to which
" (when a light is introduced into the globe) is thrown a magnified
" image of the picture placed in the slide. The shape and size
" of the globe and camera may be considerably varied. Any
" transparent picture, such as the slides now used with magic
" lanterns or photographic images or others, may be used with
" this magic camera."

[Printed, 10*d*. Drawing.]

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CONTENTS.

1. Metallica; or the Treatise of Metallica, briefly comprehending the doctrine of diverse new metallical inventions, &c. By Simon Sturtevant. (*Letters Patent, dated 29th February* 1611.) Price 1*s.* 4*d.*; by post, 1*s.* 5*d.*
2. A Treatise of Metallica, but not that which was published by Mr. Simon Sturtevant, upon his Patent, &c. By John Rovenzon. (*Letters Patent granted A.D.* 1612.) Price 4*d*; by post, 4½*d.*
3. A Commission directed to Sir Richard Wynne and others to inquire upon oath whether Nicholas Page or Sir Nicholas Halse was the first inventor of certaine kilnes for the drying of malt, &c. &c. (*Letters Patent, Nos.* 33 *and* 85, *respectively dated* 8*th April* 1626, *and* 23*rd July* 1635.) Price 2*d.*; by post, 2¼*d.*
4. Dud Dudley's Metallum Martis; or iron made with pit-coale, sea-coale, &c. (*Letters Patent, Nos.* 18 *and* 117, *respectively dated* 22*nd February* 1620, *and* 2*nd May* 1638.) Price 8*d.*; by post, 9*d.*
5. Description of the nature and working of the Patent Waterscoop Wheels invented by William Wheler, as compared with the raising wheels now in common use. By J. W. B. Translated from the Dutch by Dr. Tolhausen. (*Letters Patent, No.* 127, *dated* 24*th June* 1642.) Price 2*s.*; by post, 2*s.* 1½*d.*
6. An exact and true definition of the stupendous Water-commanding Engine invented by the Right Honourable (and deservedly to be praised and admired) Edward Somerset, Lord Marquis of Worcester, &c. &c. (*Stat.* 15 *Car. II. c.* 12. *A.D.* 1663.) Price 4*d.*; by post, 4½*d.*
7. Navigation improved; or the art of rowing ships of all rates in calms with a more easy, swift, and steady motion than oars can. By Thomas Savery. (*Letters Patent, No.* 347, *dated* 10*th January* 1696.) Price 1*s.*; by post, 1*s.* ½*d.*
8. The Miner's Friend; or an engine to raise water by fire, described, &c By Thomas Savery. (*Letters Patent, No.* 356, *dated* 25*th July* 1698, *and Stat.* 10 *&* 11 *Will. III. c.* 31, *A.D.* 1699.) Price 1*s.*; by post, 1*s.* 1*d.*
9. Specimina Ichnographica; or a brief narrative of several new inventions and experiments, particularly the navigating a ship in a calm, &c. By John Allen, *M.D.* (*Letters Patent*, No. 513, *dated* 7*th August* 1729.) Price 8*d.*; *by post,* 8½*d.*

10. A description and draught of a new-invented Machine for carrying vessels or ships out of or into any harbour, port, or river against wind and tide, or in a calm, &c. By Jonathan Hulls. (*Letters Patent, No.* 556, *dated* 21*st December* 1736.) Price 8*d.*; by post, 9*d.*
11. An historical account of a new method for extracting the foul air out of ships, &c., with the description and draught of the machines by which it is performed, &c. By Samuel Sutton, the Inventor. To which are annexed two relations given thereof to the Royal Society by Dr. Mead and Mr. Watson. (*Letters Patent, No.* 602, *dated* 16*th March* 1744.) Price 1*s.*; by post, 1*s.* 1*d.*
12. The letter of Master William Drummond for the construction of machines, weapons, and engines of war for attack or defence by land or sea, &c, Dated the 29th Septemper 1626. (*Scotch Patent, temp. Car. II.*) Price 4*d.*

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NOTICE.

The Abridgments delivered at the Patent Office by the Applicants for Letters Patent will in future be published weekly (commencing on Friday, July 14), with Indexes of Persons and Subjects. In the body of the work the Abridgments of the Provisional and Complete Specifications will be published in regular numerical order at the expiration of the term of six months from the date of application. But each weekly number will have an appendix, containing the Abridgments open to public inspection before the expiration of the term of six months, in consequence of the Patentees having filed their Final Specifications, and also the Abridgments of Complete Specifications just received. These Abridgments will be subsequently printed in the body of the work in their proper places, in order to preserve the numerical and chronological arrangement of the book. In the indexes of each successive number all the previous indexes will be incorporated until the end of the year; and then the last indexes only should be retained to bind with the fifty-two weekly parts in one volume for the year.

B. WOODCROFT.

July 10, 1871.

⁂ The work referred to in the above notice is published (under the title of "Chronological and Descriptive Index of Patents," &c.) on Friday in each week, and is forwarded, post free, to subscribers. Terms 22*s.* per annum. Subscriptions received at the Sale Room of the Patent Office, 25, Southampton Buildings, Holborn, where also single copies, at 4*d.* each, may be obtained. Post Office Orders to be made payable at the Post Office, Holborn, to Mr. Bennet Woodcroft, Clerk to the Commissioners of Patents.